Montana Outdoors

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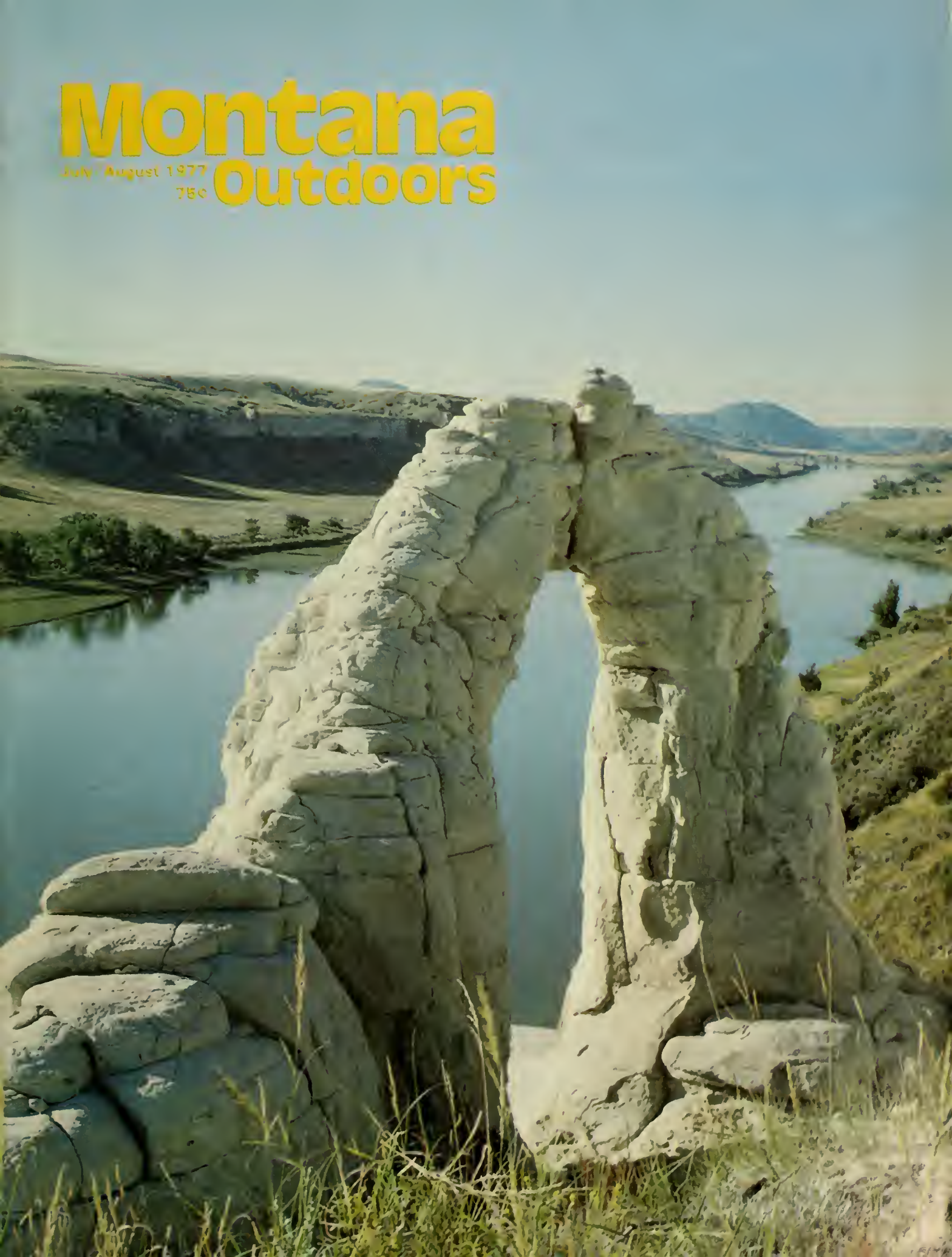

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THE COVER: For the many Montanans who worked long and hard to preserve a wild, free-flowing Missouri River, Ken Walcheck's article on page 15 will be very enjoyable reading. He reviews the successful citizens' effort step by step and gives credit where credit is due. Now, the battle is over. And the Missouri (front cover, F&G photo: Dick Ellis) and its abundant wildlife, such as the great blue heron (back cover, photo: Vince Claerhout), have a wild future.

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ASHTON'S BUTTE

The Director's Column

During a time when more people are demanding more and more from Montana's resources, Dept. of Fish and Game responsibilities to wildlife and recreation become increasingly important. To help meet increased demands on resources and wildlife, the department's land acquisition program is vital.

Acquisition of game range lands helps insure the future of Montana's big game populations. In many cases, the acquisition of a small piece of first-class winter range benefits the game population over a large area. This is particularly true in western Montana where deer and elk from a widespread area might depend on a relatively small winter range. And in some eastern Montana locations, such important big game animals as the antelope migrate from long distances to specific wintering areas.

Other acquisition programs include waterfowl habitat, fishing access sites on lakes and streams, state parks, recreation areas, access corridors to federal and other public lands, historic sites and state monuments. Of course, these lands are all open to public use and enjoyment with only minimal regulation.

Lands *controlled* by the Dept. of Fish and Game amount to approximately .0034%—slightly more than one-third of one per cent—of Montana. The department *controls* about 321,000 acres of land in the state, but only 193,000 acres is actually owned. The rest is leased, primarily from the federal government, large corporations (The Anaconda Co. and Northern Pacific Railroad), the State Land Board and some from private individuals.

The types of land controlled by the department under patent, lease, easement, agreement or withdrawal fall into four major categories:
(1) game management areas—These lands consist of big game winter range and waterfowl and upland game bird production areas, although such lands also benefit other game and nongame wildlife as well. These lands are usually of low agricultural potential, but they provide public hunting, fishing and other forms of outdoor recreation. This category comprises 283,689 acres.

(2) fishing access sites—These lands, which total about 14,080 acres (143 sites), assure permanent public access to prime fishing waters. Many access areas include developments for outdoor recreational use and many provide habitat for game and nongame wildlife.

(3) state parks, monuments and recreation areas—These areas total approximately 22,461 acres (78 sites) and they include areas with scenic, scientific, historical, archaeological or recreational significance. All such areas are managed to provide maximum recreational opportunities, and some include important wildlife habitat.

(4) fish hatcheries and administrative sites—These lands total about 610 acres and include areas occupied by department office buildings and fish hatcheries.

Department purchase of most lands does not remove them from county tax rolls. Local governments continue to receive payments "in lieu of" (but in the same amount as) land-based property taxes. In 1976, the department's tax bill for these lands was $72,000.

The department's land acquisition program benefits all Montanans, in addition to Montana's wildlife. We struggle to maintain big game winter range, quality recreational sites and vital access points, but this becomes increasingly difficult during a time when Montana's resources face unparalleled demand.

One of the few ways to insure a future for wildlife—and a future for outdoor recreation as we know it today—involves setting land aside through the Dept. of Fish and Game acquisition program. Hopefully, the department will continue to purchase key tracts of land for wildlife and recreation within the framework of its budget.

Robert F. Wambach

The Thunderpumper

by Hank Fischer

A FRIEND WAS EXPLAINING a strange event he had experienced recently on an overnight camping trip. "I was camping on a marshy lake," he said, "and I thought I was the only one there. Toward dusk, though, I was sure I heard someone on the other side of the lake pounding in tent stakes. When I went over to take a look, I couldn't find anything—no people, no tent and no stakes."

My friend was no doubt fooled by an American bittern. While the most celebrated residents of our rapidly disappearing wetlands include ducks, geese and swans, the most unusual denizen of the tules could be the common but little known bittern. The reclusive bittern (*Botaurus lentiginosus*), a member of the heron family, is more often heard than seen. Its distinctly unbirdlike call has puzzled many an outdoor enthusiast.

Many persons have likened the call of this bird to the sound of a stake being driven into wet ground. Others compare it to the sound a hand pump makes when it is being primed. Whatever the description, the bittern's unusual vocal abilities have earned it the nickname of "thunderpumper." The bittern's pumping, which serves both as a warning to rivals and a mating call, is caused by ingesting large quantities of air and subsequently ejecting the air in great gulps. Ornithology texts describe the call as "oong-ka-choonk, oong-ka-choonk," but this does little justice to the thunderpumper's resounding note.

Although the American bittern ranges throughout North America, only serious wildlife observers and nature enthusiasts generally know it. This chunky brown heron, most readily identified by its black wing tips, is both secretive and seclusive.

Like other members of the heron family, the bittern's habitat usually consists of marshes, rivers or reedy lakes. Unlike many other members of Ardeidae, however, the bittern does not form colonies, and thus is rarely seen in large numbers. Rather, this ghost of the marshes lives a solitary existence except during the mating period.

The bittern's remarkable camouflage technique provides another clue to why this shy bird remains unknown. When predator or man approach, the thunderpumper points its bill skyward, displaying its vertically striped brown and tan chest. Remaining motionless, the tawny bittern effectively blends in with the surrounding reeds and vegetation. Another remarkable adaptation, the bittern's yellow eyes are set extremely low on its head. This allows the bird to observe the approach of the cause of its alarm, even though the bittern's head is pointing straight into the air.

Once while sitting in a duck blind, I had the rare fortune of spotting a bittern before it sighted me. The skulking bird gave me a lesson in patience and stealth. In typical hunting position, this heron displayed a low, crouching profile with its bill only a few inches off the water. The bird's progress was painfully slow, lifting one leg at a time and never splashing or dripping water. If something caught its eye, it would immediately freeze, regardless of position. It would then slowly cock its head to the side to get a better view, and with a lightning-like thrust of the bill plunge its head underwater. It was successful more often than not.

After watching this curious bird for several minutes, it spotted me and immediately went into its familiar "sun gazing" routine—head straight up and still. Many bird watchers have reported that if the wind is blowing while the bittern is in this position, it will sway back and forth to simulate the movement of the reeds.

Curious to see how closely the bittern would allow me to approach while in its camouflaged position, I stepped out of the blind and began to approach the stationary bird. When I was within about 10 feet, the bittern suddenly jumped clumsily into the air and emitted a loud squawk. Pulling its neck in and letting its legs trail in typical heron fashion, the bird flew only a short distance before settling into the protective reeds again.

The American bittern is medium-sized for a heron, about 26-28 inches long with a 36-48-inch wingspread. Food commonly consumed includes crayfish, frogs and small fish. The thunderpumper impales these small creatures on its dagger-like bill before swallowing them whole. So strong is the bittern's three-inch bill that at one time various Indian tribes used it for arrowheads.

This secretive bird usually constructs a well-concealed reed nest deep in the cattails, out of sight of such predators as hawks, mink or water snakes. From three to seven eggs are normally laid, and they usually hatch in slightly less than a month. In only a few weeks, the young bitterns learn the "freezing" act that will afford them protection throughout their lives.

The best time to locate the bittern is probably late spring and summer, because this is when the thunderpumper emits its peculiar call. Listen carefully for this unusual nongame wildlife species, and you'll never be fooled into thinking someone is pounding in tent stakes nearby. ■

Anti-Hunting: A Wasteful Issue

The following article was written by Ed Kozicky and John Madson of Winchester-Western's Conservation Dept. It was originally presented as part of a panel discussion on hunting and anti-hunting conducted for the student chapter of The Wildlife Society at Louisiana State University, April 16, 1975.—Ed.

TODAY'S SURGE of anti-hunting sentiment is nothing new; in one form or another, it has existed in this country for a long time.

Reasons for anti-hunting feeling have varied over the years. Sport hunting was once regarded as the idle pursuit of such ne'er-do-wells as Rip Van Winkle, and the only acceptable sport hunters were the well-to-do. By the early 1930s, with game supplies at a low ebb and modern conservation just getting under way, there was widespread sentiment against hunting and it was felt that it was only a matter of time before it ceased to exist as a sport. However, the Great Depression gave people other things to think about, and also temporarily changed hunting from a sport to a necessity. It put food on the table.

As the Depression eased, World War II focused attention on matters other than hunting. But then came Korea and Vietnam—long, bloody holding actions that wearied the public of killing and provided new reasons for opposing recreational hunting.

At the same time, the period after World War II saw a shift from a rural to an urban-oriented society. Hunting is basically a rural art, and Americans were growing away from their rural traditions. How many people today have ever helped their fathers butcher hogs, cattle or chickens for family use? As we became more urbanized we abandoned homey skills and the traditions of those skills. To millions of Americans today, the rural art of hunting is as obsolete as the quilting bee.

Then came the miracle age of electronics. The outdoors could be brought into the living room through a picture tube, and Disney film productions lost little time in doing so. A vast Sunday evening audience was riveted to the Disney version of wildlife. Starting with a proven formula for success—the humanization of wildlife with such cartoon characters as Bambi—the Disney studios went on to depict Mother Nature as a kind old grandma who provides a peaceful and idyllic existence for her charges. Little mention was made of nature's stern realities—of the survival of the fittest, the constant struggle for food and cover and the rule of fang and claw. Many viewers began to feel that wild animals live in perpetual harmony in enchanted forests, a vision of freedom, peace and beauty that was missing from their own lives. In their new-found love of wildlife—whether real or imagined—they could not bear the thought of those wild creatures being hunted or trapped.

Others, having considered the matter a little deeper, confused conservation with preservation. Since they recognize wildlife conservation as something "good," they feel that killing wildlife must surely be "bad." They have never quite understood that wildlife conservation and the modern hunter are inseparable, nor that preservation is only a minor element of conservation.

We professional game managers have been partly at fault. During the growing interest in wildlife, we gave the public little or nothing to do to benefit wildlife. We have given them no direct action programs of their own, and the wildlife-loving public has longed for direct personal action. Consider the booming industry in songbird feeders and foods during the past 10 years. But this wasn't enough. Some people, denied a positive role in wildlife conservation, began to champion a negative cause: anti-hunting. It is a natural cause to champion—spectacular, righteous and certainly inflammatory and easily understood. These same elements were found in the early action taken by sportsmen, who attempted to increase game supplies with such obvious approaches as predator control, game farms and indiscriminate stocking. Real progress wasn't made until emotional guesswork gave way to professional game management, and the real problem emerged: the need for adequate habitat.

Emotion is a prime ingredient in any crusade, but if real progress is to be made, common sense must prevail and lasting solutions must be based on facts, not emotion. Anti-hunters are still in the first stage, with demogogues playing on emotion and prejudice in an effort to gain a following. For example, take Cleveland Amory, whose most notable contribution has been advocation of a "Hunt the Hunters Hunt Club"—the main ground rule of which is not to shoot a hunter within the city limits. Can such sick humor lead to reasonable solutions of social problems? Certainly not—it only adds fuel to the emotional fires on both sides. Yet, this self-styled "conservation expert" has found an opportune time to sell books and exploit TV talk shows even though he has no real

field experience of any kind, nor any background in resource management. Such a person angers the dedicated hunter and widens the gulf of misunderstanding between the hunter and the nonhunting nature lover.

It appears to us that the greatest gap between hunter and anti-hunter exists at the lowest levels of outdoor experience, knowledge and perception. The greater the lack of real outdoor mileage and perception, the greater this gap between hunter and anti-hunter.

The gap narrows as outdoor experience and understanding of nature increase, and the deeply involved hunter and the deeply involved naturalist may merge until they are indistinguishable. As he matures, the ideal sportsman is a balanced blend of hunter, naturalist and conservationist. He's a man with many polished outdoor skills and abilities, whose affection and knowledge of nature are matched by his efforts to conserve it. The same can be true of the nonhunting outdoorsman. We know skilled and experienced naturalists who have never hunted, but none of these are vociferous anti-hunters.

Still, such people are likely to wonder why men hunt at all. Many hunters wonder, too.

Some of the best answers have come from the eminent Spanish philosopher, Jose Ortega y Gasset, who was intrigued by hunting as a basic human pursuit that is as profound as it is universal. As a philosopher, he felt that the needs of living men are shaped by a prehistory that is still urgent within them; he believed that essential human nature is inseparable from the hunting and killing of animals, and that from this comes the most advanced aspects of human behavior.

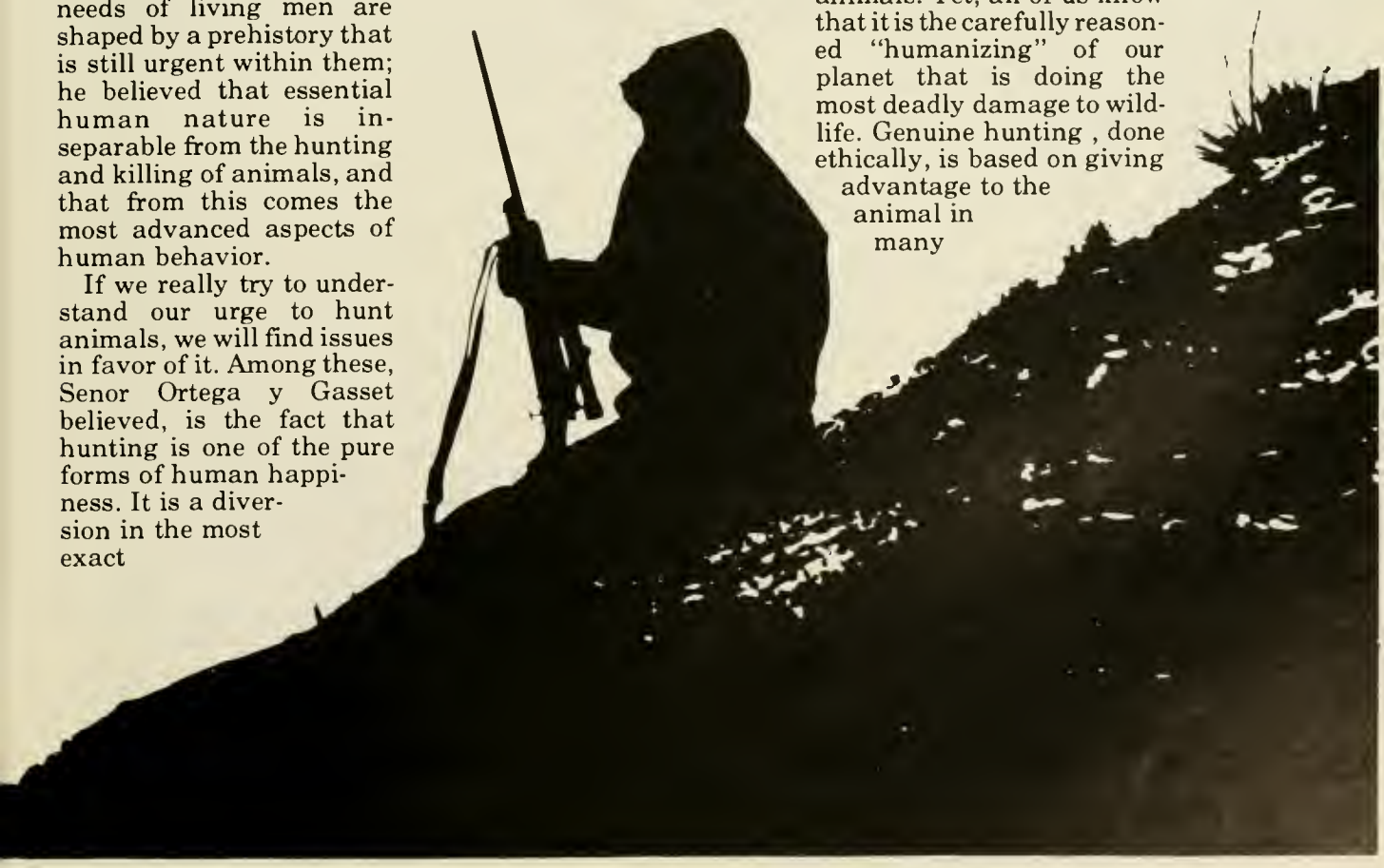
If we really try to understand our urge to hunt animals, we will find issues in favor of it. Among these, Senor Ortega y Gasset believed, is the fact that hunting is one of the pure forms of human happiness. It is a diversion in the most exact sense—a recapitulation of our racial youth, a return to fundamentals that we instinctively feel are free, basic and right. For 99% of our racial life we have been hunters, and the little time frame in which we now exist seeks to deny us the freedom in environment that made us what we are. No wonder we would rather hunt pheasants than shuffle papers in the office.

One of the great points in favor of hunting is that it's a classic exercise in freedom. For many men, it is the truest, most personal exercise in freedom that is available today—and we support wildlife populations not just so we will have something to kill, but in order to have a reason to hunt. As Ortega puts it: "One does not hunt in order to kill; on the contrary, one kills in order to have hunted." Put another way, we do not hunt for the joy of killing, but for the joy of living.

Our critics piously tell us that it is not necessary to kill to enjoy wildlife. Of course it isn't. Genuine hunters know that as well as any man—and certainly better than most.

There is no real substitute for hunting—even though many of us could have a full life without ever killing another animal, and find plenty to do outdoors without shooting and killing. But without hunting, the salt would go out of autumn and life would take on a passive tameness.

We are told that man is ethical only when he does not kill, and that we should curb our instincts in the cause of reason and humanity, and stop killing animals. Yet, all of us know that it is the carefully reasoned "humanizing" of our planet that is doing the most deadly damage to wildlife. Genuine hunting , done ethically, is based on giving advantage to the animal in many



ways. Humanization of our natural world, on the other hand, tends to ultimately disadvantage everything that is not human. The real hunter, seeking freedom in a return to nature as it really is, does far less damage to wildlife than the modern man who seeks to bend nature to his own ends.

The moral question of hunting or not hunting is locked in an impasse. The anti-hunter cannot understand how someone can love and kill game at the same time, nor why anyone would enjoy hunting. It is a paradox beyond his comprehension, and the hunter is rarely able to explain his actions in a lucid and rational way. Each extreme involves personal emotions that are difficult to convey to the other.

From early history, the hunter concerned himself with welfare of game, and developed certain traditions, laws and ethics that govern the taking of game. It is the hunter who willingly spends money in the form of licenses and special taxes to support game management. It was a hunter who saw the need for biological facts and principles by which to manage game—Aldo Leopold. It was a hunter who promoted ways to finance the biological research needed to manage game—J. N. "Ding" Darling.

In his brilliant book, "Game Management," Leopold wrote: "Hunting for sport is an improvement over hunting for food, in that there has been added to the test of skill an ethical code, which the hunter formulates for himself, and must live up to without the moral support of bystanders. That the code of one hunter is more advanced than that of another is merely proof that the process of sublimation, in this as in other atavisms, is still advancing.

Since modern game management has been established, with hunting based on biological surpluses of wildlife, no game species in North America has been severely depleted by sport hunting and many species have been brought from scarcity to abundance—antelope, wild turkey, deer, elk and others. Revenues from sport hunting have also helped preserve wildlife habitat for the benefit of not only game, but for many nongame wildlife species.

The current wave of anti-hunting emotion will eventually spend itself, only to be renewed by future zealots. It's a pity that there is always a faction seeking to force its morality on another. If one doesn't like hunting, then one shouldn't hunt. But attempts to impose personal anti-hunting attitudes on others can only lead to bitter controversy and recrimination in which neither side really wins and wildlife is almost certain to lose. The time and effort spent in this conflict of hunter vs. anti-hunter would be far better spent in furthering positive conservation efforts. Our greatest objection to the anti-hunting movement does not lie in any threat to sport hunting, but in the wasted time and effort that it entails.

Wildlife's greatest problem today is not controlled hunting, but uncontrolled use of the environment. With an expanding world population and our commitments to feed other nations, with our problems of balance of trade and imported energy and trends to monoculture in agriculture and forestry, what of our wildlife resources? The developers, drainers, channelizers, polluters, dam builders and agribusinessmen are busy, and wildlife gets many promises but few benefits. There is no shortage of problems confronting wildlife. All over the United States, quality wildlife habitat is being drained, cut, tamed, stripped and reshaped to make more money. The need for hunter and nonhunter to work together was never more important—and the chance to do so has never been better.

The environmental 1970s have brought the cream of American youth into colleges and universities to pursue studies in natural resources. They come with a dedication that augurs well for our country's future. The sad fact of life, however, is that most public resource agencies, universities and private efforts are already well-staffed with resource specialists. What is needed is new money to take advantage of this dedication and academic excellence. The skilled manpower is available, and the time is ripe for important new management programs—particularly programs for nongame wildlife species.

Millions are spent each year for the management of game species, but practically nothing is spent on the "poor relations"—the nongame wildlife. These are no less beautiful nor unique than our game species, nor less worthy of concern. We must broaden wildlife conservation to include all species of wildlife, not just the favored few. Conservation of nongame wildlife has special meaning because it is everyday wildlife; it includes species that are adaptable to cities and suburbs if given half a chance, and which can be enjoyed by millions who never have the chance to spend time in forest, fields and marshes.

It is not reasonable to expect hunters to support the management of both game and nongame; although they provide millions of dollars for wildlife conservation, it is hardly enough, and our national wildlife is only getting half the attention that it deserves. Nongame wildlife management is an ideal course for nonhunters who are aching to do something but do not choose to support game species that will be hunted.

Instead of wasting our efforts on the propriety of hunting—which is something like the old theological debate over how many angels can stand on the head of a pin—we should be working together with all types of wildlife and joining forces against the despoilers of natural environments. There's no better way of putting this than by paraphrasing one of Aldo Leopold's closing comments in "Game Management": There is, in short, a fundamental unity of purpose and method between hunters and anti-hunters. Their common task of teaching the public how to modify economic activities for conservation purposes is of infinitely greater importance, and difficulty, than their current differences of opinion over hunting. Unless and until the common task of wildlife conservation is accomplished, the question of hunting is in the long run irrelevant. ■

The Catchall

Hunting—What About the Future?

Hunting, along with many other things, like blue ribbon trout streams and miles and miles of wide-open prairie and mountain country, combine to create a unique life style for those of us fortunate enough to live and work in Montana. But times are changing, and most of us wonder where the future will take us in terms of hunting, fishing and outdoor recreation in general a few years down the road. Will we still be able to enjoy a late fall elk hunt on the snowy slopes of that fortunate mountain, or an expedition for antelope to eastern Montana's expansive spaces? Will we be able to do so in relative solitude and without a great deal of competition from other hunters?

We all know from recent experience that some of our favorite "hot spots" for duck hunting or something else have ceased to exist. We know about the recent increasing emphasis on anti-hunting, mainly back East, but certainly making itself felt here as well. Taken together, all of this adds up to a big question mark about the future.

A technical paper given recently at The Wildlife Society's Northwest Section meeting in Kalispell sheds some light on the future. John Hendee and Dale Potter, both employes of the U.S. Forest Service in Seattle, sampled different states for a variety of information on hunting. Their results should be of interest to Montana hunters.

For example, hunting is a popular sport nationwide. In 1974, 8% of the U.S. population over 12 years of age hunted. (Only 4% skied, 9% hiked and 14% camped.) Also, for the last 15 years, hunting has held its own in regard to the proportion of the American public that hunts. State by state, hunting participation ranged from a high of almost 17% of the population in the Mountain states, to a low of 5% in New England, Middle Atlantic and Pacific regions. "Clearly," according to the report, "hunters are a minority group but so are other prominent outdoor recreation groups—such as skiers, hikers and campers. Urban sprawl and development continue to reduce game habitat and hunting opportunities. But the demand for hunting seems likely to continue."

Researchers state wildlife management cannot expect to increase or even maintain the supply of game and its supporting habitat in the face of ever increasing demand. They say that a leveling off, or even a decline, in hunting participation would be a "blessing in disguise" which would help balance demand for hunting with supply.

The report shows that most U.S. hunters are middle-aged adults, averaging only slightly more education than the general population and closely resembling the general population in their income.

"Hunting does not overrepresent either the rich or the poor," according to the report, contrary to the picture some anti-hunting groups have tried to paint. And hunters are primarily urban residents with rural backgrounds who are introduced to the sport before they are 20 years old. "The benefits of hunting, whatever they may be, are being distributed to a rather typical group of Americans," say the researchers.

The report shows that about 25% of all hunters belong to sportsmen's organizations, and this ". . . makes hunters one of the most highly organized outdoor recreation groups." About 60-80% of hunters regularly read one or more sportsmen's magazines.

Hunting provides several general pleasures or satisfactions for people, according to the report. Although bagging game is an obvious goal, the report states this is not named as the *only* or *primary* satisfaction in hunting. The most commonly reported attractions of hunting include nature appreciation, shooting, using skills, physical exercise, relaxation and others, of which harvesting game is a part.

Hunting, like other kinds of outdoor recreation, provides a variety of diverse satisfactions. With the amount of available game dwindling and success per hunter declining, hunting satisfactions other than

First Day of the Open Season

Although this cartoon easily could have appeared in yesterday's newspaper, it comes from the department's third biennial report, published in 1906. The cartoon originally appeared in a former Montana newspaper, the Anaconda Standard.

recycled paper

success are likely to be even more important. This leads the researchers to state that ". . . game and land managers must coordinate their efforts to provide hunters with quality experiences in a broad sense. The kinds of experiences available to hunters are strongly affected by management practices unrelated to game production, like road access, crowding and law enforcement."

According to the report, the studies in New Jersey showed that 38% of the population in 1972, and 43% in 1974, disapproved of deer hunting. But the New Jersey opposition appeared to be stronger than elsewhere.

The report identifies at least 25 organizations which have an anti-hunting objective. In 1973, these groups claimed a total membership of 314,000 persons. According to the researchers, both anti- and pro-hunting advocates have a variety of supporting reasons for their feelings and attacks on these reasons will probably not result in changed attitudes. But they do suggest some ways for game managers and hunters to disarm anti-hunter criticism:

(1) Hunter information, training and safety programs need renewed emphasis to reduce hunter accidents, promote sportsmanship, instill a conservation ethic, build respect for property owners and bring the realization among all hunters that their behavior contributes to an image of hunting that may affect its acceptability to the public at large.

(2) More effective programs are needed to promote and extend wildlife-related law enforcement, including trespass and property protection regulations. The researchers urge soliciting hunter cooperation in reporting game violations, since this would be superior to continually adding more enforcement personnel to conservation department rosters, which costs money.

(3) Hunting literature, advertising and movies should feature hunting as a source of varied and healthy outdoor recreation satisfaction.

(4) Better definitions are needed of what is or is not acceptable sport hunting and the responsibilities of sportsmen, game managers and landowners in enforcing such a code.

Finally, the report states the political base of hunters in sportsmen's organizations and their network of communication through sportsmen's magazines still seems a powerful force for protecting the future of hunting.

In Montana, we undoubtedly face increased numbers of hunters, fewer hunting opportunities and more restrictions in the future. The report shows this trend nationwide. We've experienced it here in Montana during the last few years, and unfortunately, more of the same will very likely occur in the future. But if we all face up to the challenge, attempt to work out a solution to access problems and do what must be done to insure perpetuation of both wildlife and wildlife habitat, we have reason to hope that our children will know some of the same things we experienced and even took for granted.—*Steve Bayless*

Persistence Pays Off at Giant Springs

The persistence of the Giant Springs-Heritage Park Committee has resulted in a 48-acre expansion of Giant Springs State Park. Nearly three years ago, citizens began to discuss the idea of expanding and improving the existing state park. Their efforts resulted in a fund drive netting $31,000, which they contributed to the Dept. of Fish and Game's Recreation and Parks Division for purchase of the adjacent tract. The donation was matched with state and federal funds. Pictured presenting the governor with the check are, from left, Dr. Robert Wambach, director of the Dept. of Fish and Game; Joe Forzley, a long-time member of the committee; Margaret Warden, state senator from Great Falls and Giant Springs-Heritage Park committee member; Gov. Thomas L. Judge; Art Dickhoff, committee chairman, and Wayne Leiner, committee fund drive chairman. The land was purchased from Mr. and Mrs. Victor Kunesh, who operated a house moving business at the site. The Kuneshes made a sizable contribution to the committee's fund drive, Leiner noted. In addition to money, Great Falls residents have donated labor, equipment and materials for cleanup and park improvements.

Wildlife Parasite May Pose Health Hazard

A parasite which infects foxes and coyotes may pose a new health hazard to Montanans, according to the Veterinary Research Laboratory in Bozeman. The parasite, a small tapeworm known as *Echinococcus multilocularis*, was recently found in two red foxes in Gallatin and Madison counties, marking the first record of this tapeworm species in the state. The finding is significant because *E. multilocularis* is known to cause a potentially fatal liver disease in man.

Normally, the adult tapeworm lives in the intestines of foxes and coyotes. Tapeworm eggs, passed in feces, are picked up by rodents feeding on contaminated plant material. The eggs develop into larvae in the rodent's liver and, when the rodent is eaten by a fox or coyote, the cycle is completed. Dogs or cats can also be infected by eating mice or other rodent carriers of

tapeworm larvae.

Man can enter the cycle through accidental ingestion of tapeworm eggs. Although the probability of infection is small, consequences are severe. The tapeworm larva grows unchecked in the liver, often replacing much of the normal tissue before symptoms are evident. Surgery is the only known treatment and the disease, called multilocular hyadtidosis, is often fatal.

Although the size and distribution of *E. multilocularis* populations in Montana are unknown, sportsmen should take precautions to guard against infection. Specifically, extra care should be paid to personal hygiene when handling or skinning foxes or coyotes.

A survey is now under way to determine the incidence of this tapeworm in the state's wild and domestic animals and to clarify public health implications. Persons wishing to cooperate may contact the Veterinary Research Laboratory or the Dept. of Fish and Game Wildlife Laboratory (both on the Montana State University campus in Bozeman) for information and details on submitting specimens.—*Hugh Zackheim*

Grizzly Film Wins Again

A film about grizzly bears, produced by the Dept. of Fish and Game, has taken its third national award, according to Steve Bayless, department information bureau chief. The most recent accolade came from the Outdoor Writers Assn. at the North American Wildlife Conference in Atlanta, Ga. The writers chose the film as third best conservation film produced in the United States during 1976.

Bayless said other awards included a second place from the American Assn. for Conservation Information and a bronze medal received at the International TV Festival in New York.

The 30-minute film, aptly titled, "Room to Live," depicts the life style of Montana's wilderness monarch and the problems it faces. It emphasizes that crowding by civilization and shrinking habitat, not hunting, determine the welfare of grizzly populations.

Copies of the film are available for showing from the department's Film Center in Helena.—*Kay Ellerhoff*

Brandy

Brandy was a forester.

In fact, he started out in the Forest Service when it was just 10 years old. When he retired in 1955, he had been superviser of the Bitterroot National Forest, headquartered in Hamilton, Mont., for 20 years and had watched the character and direction of the agency slowly change from the model envisioned by Theodore Roosevelt, Gifford Pinchot and Aldo Leopold.

That direction and its subsequent impact on the Bitterroot forced G. M. Brandborg not to "retire" but to keep

G. M. Brandborg

up a stiff regimen of at least eight-hour work days until his death at 84 on March 11, 1977.

Brandy's concern for FS policy spawned the clearcut controversy of the 1960s and early 70s. The Bitterroot received national attention as a forest and watershed scarred by the greed of men concerned only about how much timber they could get out and how fast it could be cut.

He would take anyone on a field trip to witness the devastation. His knees had been weakened by an earlier injury, so where they once propelled him sturdily up the steep slopes of the Bitterroot Mountains, they forced him to make his later forays by jeep. But whether he had to support himself with a cane or could stand alone on his confounded knees, Brandy still carried out his mission to stop destruction of the watershed, wildlife habitat and life zones of the Bitterroot National Forest.

Even when his knees and arthritic pains forced him to bed, Brandy would pull a table up close and conduct business as usual. He received visitors in that attic "bedroom" of his and wore calluses on his forearms from countless hours of writing letters in a prone position.

Every time you saw Brandy you could be sure he'd admonish you to read this or that, some letter, magazine article or book that had passed his great oaken door. He read vociferously—and offered the best to his friends.

It wasn't until the day he died we knew he was gravely ill. That was Brandy's way. We knew he'd go some day. Good heavens, he was 84 years old. Yet, still, he seemed as invulnerable as his beloved Bitterroots. He, like they, could stand the abuse of his years. But no man is a mountain.

Brandy wouldn't want us to grieve. He'd want us out there, fighting that next battle. Because Brandy lived for the future, knowing things would get better, that someday the policy makers would wake up.

The greatest tribute we can make to him is to rededicate our lives to Brandy's good fight. And thank God we had the honor to know a great man.—*Robin Tawney*

Land Donation Includes Moose Winter Range

In many areas of Montana, extensive subdivision has converted wildlife habitat into residential development. Recently, an Arizona couple acted to reverse this trend by a thoughtful land donation in the Cooke City area.

In February, Mr. and Mrs. Dale Alley of Mesa, Ariz. donated 14 acres of stream bottom land to the Gallatin National Forest. The land, situated just east of the northeastern entrance to Yellowstone National Park, includes key moose winter range. And, according to Gallatin National Forest Superviser, Lewis E. "Gene" Hawkes, moose winter range is a commodity in "critically short supply in that area."

Gallatin National Forest Information Officer Ross MacPherson says the land will be maintained as open space in recognition of its value as wildlife habitat. The Alley's dona-

tion, he notes, takes on added importance in light of increasing subdivision in surrounding areas. —*Hugh Zackheim*

"The Floater's Guide" Reprinted

The May/June 1977 issue of *Montana Outdoors* featured "The Floater's Guide," a comprehensive summary of Montana's favorite float streams and the increasingly popular sport of river floating. The article has been very popular, so we've decided to reprint it as a handout. Copies can be obtained by writing Dept. of Fish and Game; Helena, MT 59601, or by stopping at any regional office.—*Bill Schneider*

We Goofed

On the back cover of the May/June 1977 issue, we featured a photo of a young girl holding some fish caught during the annual Big Brothers and Sisters of Butte float trip down the Big Hole River. However, the girl with the trout, Penny Krause, was incorrectly identified as Dorothy Shepherd. We regret this mistake.—*Ed.*

Parks Division Offers Guide

Where to go, how to get there, what facilities are available. These and many other questions are answered by the "Montana Recreation Guide," prepared by the department's Recreation and Parks Division.

The colorful, folding map guide indexes over 250 of the department's fishing access sites, wildlife management areas, state parks and monuments, recreation areas and fish hatcheries. Directions on how to find each site, as well as what facilities are available, are included. The comprehensive map includes the state's major streams as well. Color photographs and a description of some of the major recreation areas and parks, such as Canyon Ferry Reservoir and Lewis and Clark Caverns State Park, provide a helpful introduction to Montana's recreational opportunities.

The guide will be available in early July from the Recreation and Parks Division; Helena, MT 59601. Later, the Travel Promotion Unit, Dept. of Highways, will also distribute the guide.—*Kay Ellerhoff*

From left, Al Bishop, Land Lindbergh

Bishop, Lindbergh Join Commission

Both Al Bishop and Land Lindbergh, Gov. Thomas L. Judge's newest selections for the Fish and Game Commission, feel landowner problems need immediate attention.

Bishop, 52, replaces Willis B. Jones, former commission chairman. Bishop, a Billings lawyer, says, "Much of our relatively abundant game is just not available to sportsmen because of the refusal of landowners to allow access to their lands for one reason or another."

Bishop strongly believes the department has fallen down in its public relations—thus creating or worsening many landowner/recreationist relationships. "We have got to go out and explain our policies to the landowner. It's simply a matter of better understanding through better communications.

"The landowner has the habitat," he notes. "Sportsmen are simply harvesting a valuable crop that the landowners can't harvest. It's a shame to let it [game] go to waste."

Bishop, his wife, Caroline, and their two children live in Billings. He is a member of the Montana Bar Assn., Yellowstone Rifle Club, National Rifle Assn., Montana Rifle and Pistol Assn., Billings Lodge No. 113 A.F. & A.M. (Past Master) and current treasurer of the Billings Scottish Rite Assn. He also serves as vice president of the Billings YMCA and is a member and former president of the Billings Rod and Gun Club.

Gov. Judge chose Lindbergh, 40, to replace Dr. W. Leslie Pengelly. Echoing Bishop's feelings, Lindbergh says his first concern is landowner/recreationist relations, and he added he receives more complaints on this problem than anything else. "I see this [landowner/recreationist relations] as the biggest problem facing the department today."

One solution may be special walk-in hunting areas similar to one developed in the Blackfoot Valley near his ranch. "We could use more of these," he notes. "Of course, we can't have them everywhere, but there are many other areas that lend themselves to this kind of management."

He also favors recreational corridors such as the one established to manage floating, fishing and other outdoor recreation along part of the Blackfoot River. He hopes to be able to investigate the possibility of creating similar corridors, with the cooperation of local landowners, on other rivers with access problems.

Lindbergh, his wife, Susan, and their two children live on a ranch near Greenough, a small ranching community in western Montana's Blackfoot Valley. He is a member of the American Cattlemen's Assn., Montana Stockgrowers Assn., Blackfoot Valley Stockmen's Assn. and the Environmental Information Center.—*Bill Schneider*

1977 Legislative Roundup

The following is a brief summary of legislation considered during the 1977 Montana Legislature pertinent to fish, wildlife and the environment. Those bills signed by Gov. Thomas L. Judge will go into effect July 1, unless otherwise indicated.

Lack of space limits us to short, often incomplete, descriptions. For additional information, contact the Legislative Council, Room 138, State Capitol; Helena, MT 59601.—Ed.

SENATE BILLS

SB 15 (Warden, D-Great Falls)—signed by governor
Names the blackspotted cutthroat trout as Montana's state fish.

SB 44 (Manning, D-Hysham; Mathers, R-Miles City; Towe, D-Billings; Aber, R-Columbus)—signed by governor
Brings the coal tax distribution formula into compliance with the Montana Constitution. Revises the percentages distributed to local governments and state programs. It allows the Dept. of Fish and Game to use part of our funds from the coal tax for operation and maintenance purposes the first year of the biennium (1977-79). In the second year of the biennium, it can be used for operation and maintenance of sites acquired with funds under this act.

SB 47 (Roberts, D-Libby; Boylan, D-Bozeman, and others)—signed by governor
Provides for management of the bobcat as a furbearer.

SB 52 (Lockrem, R-Billings; Lensink, R-Bozeman)—killed on second reading in the Senate
Would have prohibited the carrying or use of air rifles by those under 14 except when accompanied by a parent, guardian or supervised by a firearms safety instructor.

SB 69 (Blaylock, D-Laurel; Regan, D-Billings; Watt, D-Missoula)—killed on second reading in the Senate
The so-called "Bottle Bill." Would have required use of reusable beverage containers for beer and soft drinks.

SB 110 (Dover, R-Lewistown; Galt, R-Martinsdale; Manley, D-Drummond, and others—killed on second reading in the House
Would have repealed the requirement that subdivisions be developed in harmony with the natural environment and that approval of any subdivision be contingent upon a written finding of public interest. It would have also removed the list of criteria, including "effects on wildlife and wildlife habitat," that form the basis for the written finding of public interest.

SB 117 (Lowe, R-Billings; Galt, R-Martinsdale; Dunkle, R-Helena)—signed by governor
Authorizes the Dept. of Fish and Game to use part of the fishing license fee earmarked for purchase of fishing accesses, for operation, development and maintenance.

SB 123 (Fish and Game Committee, by request; Dunkle, R-Helena, chairman)—killed in Senate Fish and Game Committee
Would have facilitated placement of wildlife on the Montana endangered species list and species in need of management list. It would have allowed the Dept. of Fish and Game to revise these lists, under its rule-making procedure.

SB 139 (Manley, D-Drummond; Galt, R-Martinsdale; Flynn, D-Missoula)—killed on second reading in the Senate
Would have eliminated the Dept. of Fish and Game's role in the Natural Streambed and Land Preservation Act passed by the 1975 legislature. Local officials would have gained increased control.

SB 148 (Warden, D-Great Falls; Roberts, D-Libby, and others)—died in House Fish and Game Committee
Would have prohibited use of vehicles, including helicopters, to harass wildlife. However, the proposed amendments to the existing statute were included into HB 299 which was signed by the governor.

SB 169 (Lowe, R-Billings; Dunkle, R-Helena, and others)—signed by governor
Prohibits the use of recorded calls in taking wildlife, except predatory animals and unprotected birds.

SB 173 (Jergeson, D-Chinook; Manley, D-Drummond, and others)—killed in House Natural Resources Committee
Would have required at least 10% of the anticipated expenditures for Dept. of Fish and Game range acquisitions be used to purchase development rights of productive agricultural lands.

SB 203 (Dunkle, R-Helena)—signed by governor
Revises the penalties for fish and game violations. Raises minimum fine from $25 to $50; levies a minimum fine of $500 for unlawful taking of certain big game animals and provides a minimum of $300 for unlawful taking of deer and antelope. Provides for a mandatory revocation of hunting, fishing and trapping licenses for 24 or 30 months when convicted of unlawful taking of big game animals, including deer and antelope.

SB 235—(Galt, R-Martinsdale; Fasbender, D-Fort Shaw; Thomas, D-Great Falls)—killed in Senate Natural Resources Committee
Would have preserved the Smith River in its present natural and scenic condition.

SB 242 (Manley, D-Drummond)—killed in House Fish and Game Committee
Would have established guide requirements for nonresident big game or trophy game hunters in Montana.

SB 247 (Dover, R-Lewistown; Dunkle, R-Helena; Boylan, D-Bozeman)—killed in House Natural

Resources Committee
Would have deleted the option of state agencies to charge fees for preparing environmental impact statements and deleted the required filing fee for an application as specified under the Major Facility Siting Act.

SB 281 (Etchart, R-Glasgow, and others)—signed by governor
Snares must now be tagged with the owner's name and address. Makes it unlawful to set snare traps on private property without the landowner's consent; they must be set so as not to unduly endanger livestock.

SB 302 (Roskie, R-Great Falls, and others, by request)—died in Conference Committee
Would have amended the Montana Environmental Policy Act to specify that the act does not expand the substantive decision-making authority of state agencies.

SB 317 (Jergeson, D-Chinook; Fasbender, D-Fort Shaw, by request)—killed in Senate Natural Resources Committee
Would have prohibited mining for coal and uranium on alluvial valley floors (which often provide important fish and wildlife habitat).

SB 324 (Dunkle, R-Helena; Thiessen, D-Lambert, and others)—vetoed by governor
Would have revised the Major Facility Siting Act, although only minor amendments survived both houses.

SB 342 (E. Smith, R-Dagmar)—killed in Senate Fish and Game Committee
Would have provided for a nonresident coyote/fox trapper's license.

SB 354 (Rasmussen, R-Helena; Dunkle, R-Helena)—signed by governor
Increases the state's contribution to the Montana Game Wardens' Retirement System.

SB 359 (Lowe, R-Billings; Manning, D-Hysham, and others)—killed on second reading in the House
Would have established a system of priorities for water use appropriations, with fish, wildlife and recreation in last place.

SJR 3 (Lowe, R-Billings, Hazelbaker, R-Dillon; R. Smith, D-Columbia Falls, and others)—signed by president and speaker
Requests consideration of problems concerning the use of public and privately owned lands for hunting and fishing.

SJR 21 (Roberts, D-Libby)—killed in Senate Natural Resources Committee
Requested study of the Kootenai and Yaak rivers for designation as wild and scenic rivers.

SJR 24 (Jergeson, D-Chinook; Etchart, R-Glasgow, and others)—signed by president and speaker
Supports construction of additional hydroelectric generation capacity at the Fort Peck Project.

SJR 27 (Jergeson, D-Chinook; Etchart, R-Glasgow; Kolstad, R-Chester)—signed by president and speaker
Urges including recreation and conservation of fish and wildlife as a purpose of the Fort Peck Project.

HOUSE BILLS

HB 48 (Bradley, D-Bozeman)—killed in House Natural Resources Committee
Would have clarified state policy on management of state lands. Would have required that state lands be managed to yield a broad range of monetary and nonmonetary benefits to present and future generations of Montanans and that all decisions regarding state lands be consistent with environmental policies, requirements and procedures of the state.

HB 76 (Mular, D-Butte)—killed on second reading in the House
Would have declared the mourning dove a migratory game bird.

HB 84 (Staigmiller, D-Cascade; Conroy, D-Hardin, and others)—killed on second reading in the House
Would have required the Fish and Game Commission to obtain approval of the Montana Legislature before buying, exchanging, accepting gifts of or condemning agricultural land larger than five acres in area.

HB 126 (Eudaily, R-Missoula; Ellis, R-Missoula, and others)—signed by governor
To provide for the destruction of dogs attacking or killing hooved animals. A peace officer, game warden or other person authorized to enforce fish and game laws must witness the dog attacking or killing.

HB 127 (Harrington, D-Butte; Cooney, D-Butte, and others)—killed in House Fish and Game Committee
Would have provided that interest earned by fish and game monies be credited to the Fish and Game Commission.

HB 133 (Johnston, D-Cut Bank; Moore, R-Great Falls, and others)—embodied in HB 791
Provides that the director of the Dept. of Fish and Game be removed as other department directors are removed.

HB 138 (Pistoria, D-Great Falls; Staigmiller, D-Cascade)—killed in House Fish and Game Committee
Would have prohibited fishing between the hours of dusk and dawn.

HB 158 (Waldron, D-Missoula; Courtney, D-Butte; Kimble, D-Missoula)—killed in Senate Fish and Game Committee
Would have provided a one-time certificate of ownership recording fee of $3 and deleted the annual $2 registration requirements, other than the tax-paid snowmobile decal. Also would have redefined "snowmobile" to exclude all-terrain vehicles.

HB 159 (Waldron, D-Missoula; Metcalf, D-Helena; Courtney, D-Butte)—signed by governor
Provides a $15 fine for transferees who do not apply for a transfer of certificate of ownership for a snowmobile within 20 days of purchase. Also changes the grace period for registering a newly purchased snowmobile from 10 to 20 days.

HB 162 (Lynch, D-Butte; Huennekens, D-Billings, and others)—killed in House Appropriations Committee
Would have appropriated $500,000 from the general fund

to the department for the biennium ending June 30, 1979, for contributions to local government outdoor recreation projects not paid for by funds received from the Bureau of Outdoor Recreation.

HB 181 (Ellerd, R-Bozeman; Scully, D-Bozeman, and others)—killed on second reading in the House

Would have provided for a seven-member Fish and Game Commission, with the two additional members being a rancher and an outfitter.

HB 256 (Quilici, D-Butte; Menahan, D-Anaconda, and others)—signed by governor

Requires taxidermists to keep records for five years of all dead wildlife mounted, preserved or prepared by them.

HB 268 (Moore, R-Great Falls; Seifert, R-Polson, and others)—killed on second reading in the House

Would have repealed the hunting license fee increases passed by the previous legislature.

HB 299 (Ellison, R-McLeod; R. Baeth, D-Martin City, and others)—signed by governor

As originally written, this proposal prohibited hunting the same day as, or the day following, a flight to locate game. As written, it also prohibited using aircraft for transporting hunters. As passed, this bill embodies SB 148. Other amendments deleted the prohibition against hunting the same day or the day following a flight and made it illegal to use aircraft, including helicopters, to hunt, move camps, haul wildlife, etc. into national forests.

HB 310 (Day, D-Glendive; Bengston, D-Shepherd, and others)—signed by governor

Provides for an extension of the suspension of action on applications for permits to appropriate surface water or for changes in purpose of use in the Yellowstone River Basin. Extends to Jan. 1, 1978 permits for appropriation of Yellowstone water which were filed before Jan. 1, 1977, unless the Board of Natural Resources made a final determination before that date. The 1978 date may be extended by the Board of Natural Resources the length of delay incurred if any civil action ensues which would prevent or delay the board from making a final determination before Jan. 1, 1978.

HB 329 (Kessler, D-Billings; Shelden, D-Libby, and others)—killed in House Natural Resources Committee

Would have prohibited the hunting of grizzly bears except where human lives or livestock are endangered.

HB 339 (Ellison, R-McLeod; R. Baeth, D-Martin City)—signed by governor

Allows persons who have passed the hunter safety course and who will be 12 years old before Sept. 15 to buy licenses and apply for deer and antelope permits by July 1.

HB 344 (J. Gunderson, D-Power; Dassinger, D-Forsyth, and others)—killed on second reading in the Senate

The "Montana Family Farm Act of 1977." Would have prohibited certain corporations (with assets of $5 million or more) from engaging in agricultural production or owning agricultural land.

HB 388 (Kimble, D-Missoula; Uhde, D-Kalispell, and others)—killed in House Appropriations Committee

Would have appropriated money to the governor's office to create and administer the Cabin Creek Task Force.

HB 441 (Bradley, D-Bozeman; Meloy, D-Helena; Metcalf, D-Helena, and others)—killed in House Natural Resources Committee

Would have included the entire state within the scope of public need as used in the Major Facility Siting Act. This bill would have focused the need on consumer requirements within Montana.

HB 486 (Frates, D-Billings; Waldron, D-Missoula; Uhde, D-Kalispell)—killed in House Judiciary Committee

Would have amended the Montana Water Use Act and facilitated appropriation of water rights for wildlife or recreational uses.

HB 510 (Ellis, R-Missoula; Tropila, D-Great Falls, and others)—killed on second reading in the House

Would have provided for the hunting of all game animals by holders of special bow and arrow licenses when they also hold prerequisite licenses.

HB 524 (Curtiss, R-Fortine; Sivertsen, R-Havre; Staigmiller, D-Cascade)—killed in House Natural Resources Committee

Would have substituted the Dept. of Natural Resources and Conservation for the Dept. of Fish and Game in administering the Natural Streambed and Land Preservation Act of 1975.

HB 543 (Bradley, D-Bozeman; Meloy, D-Helena, and others)—killed on third reading in the House

Would have amended the Montana Subdivision and Platting Act by defining terms, including "subdivision." Would have required public review of all resubdivisions, eliminated certain exemptions from subdivision regulation, required that certain exempted divisions of land be surveyed, provided for expedient review of "minor subdivisions" and modified requirements for the dedication of land for parks.

HB 568 (Waldron, D-Missoula)—killed in House Fish and Game Committee

Would have provided for a $3 Montana migratory game bird license. Funds collected would have been used for acquisition, development and maintenance of wetlands.

HB 573 (Huennekens, D-Billings; Vincent, D-Bozeman)—killed on second reading in the House

To provide for the use of navigable waters in Montana for recreational purposes.

HB 592 (Meloy, D-Helena)—killed in Senate Natural Resources Committee

This bill would have amended the Montana Environmental Policy Act to change the review authority for environmental impact statements from the Environmental Quality Council to the governor's office.

HB 593 (Conroy, D-Hardin; Marks, R-Clancy, and others)—killed in House Natural Resources Committee

Would have amended the Major Facility Siting Act primarily by limiting the evaluation time on applications for a certificate of environmental compatibility and public need.

continued

HB 604 (Shelden, D-Libby; Ellis, R-Missoula; Kessler, D-Billings)—killed in Senate Natural Resources Committee

Would have improved the Hard Rock Reclamation Act, set some minimum standards and generally strengthened the existing law.

HB 621 (Cox, R-Livingston; Ellison, R-McLeod, and others)—killed in House Fish and Game Committee

Would have authorized the Fish and Game Commission to protect persons licensed to take fish and game in Montana. Fifty cents would have been added to all nonresident hunting and fishing licenses to provide a fund to pay local agencies for search and rescue operations for nonresidents.

HB 644 (W. Baeth, D-Libby; Johnston, D-Cut Bank)—signed by governor

Established a "Montana Golden Years Pass" enabling persons 65 and older to camp free for the rest of their lives in state-administered camping areas after a one-time fee of $1.

HB 657 (Curtiss, R-Fortine; Tower, R-Kalispell, and others)—killed in House Fish and Game Committee

Would have related to payments made on certain lands owned by the Fish and Game Commission in lieu of property tax payments.

HB 661 (Bardanouve, D-Harlem; Huennekens, D-Billings; Meloy, D-Helena)—killed on second reading in the House

Would have amended the Major Facility Siting Act. Would have clarified the "need" for a new facility to be based on Montana's power demand, with the need determined before environmental compatibility would be assessed. Would have required an applicant to present four alternative sites for a proposed facility.

HB 703 (Huennekens, D-Billings; Vincent, D-Bozeman; Frates, D-Billings)—killed in House Natural Resources Committee

Would have provided for recreational use of certain state lands. Would have provided for management, relief from liability and a balance between various uses. Through competitive bidding for grazing leases or timber permits on state lands, this bill would have made it attractive to lessees to allow recreational use of these lands.

HB 752 (Huennekens, D-Billings; Frates, D-Billings, and others)—killed in House Fish and Game Committee

Would have prohibited anyone other than the state from charging citizens for the right to hunt or fish.

HB 791 (State Administration Committee)—signed by governor

Makes the director the department head for the Dept. of Fish and Game. The director is appointed by the governor and serves at the governor's pleasure, present director excluded. The director is empowered to employ a deputy director and game wardens, appoint *ex officio* game wardens and employ other department staff. The department replaces the commission for most aspects of outfitter laws. Under policy guidelines set by the commission, the director has full power to act under the Nongame and Endangered Species Act. The commission shall: (1) set the policies for the protection, preservation, and propagation of the wildlife, fish, game, furbearers, waterfowl, nongame species and endangered species of the state and for the fulfillment of all other responsibilities of the department as provided by law; (2) establish the hunting, fishing and trapping rules of the department; (3) establish the rules of the department governing the use of lands owned or controlled by the department and waters under the jurisdiction of the department; (4) have the power within the department to establish wildlife refuges and bird and game preserves; (5) approve all acquisitions or transfers by the department of interests in land or water; (6) review and approve the budget of the department prior to its transmittal to the budget office, and (7) review and approve construction projects whose estimated cost is more than $1,000 but less than $5,000.

HB 836 (Driscoll, D-Hamilton; Meloy, D-Helena; Bradley, D-Bozeman)—signed by governor

Appropriates money for public acquisition of Wild Horse Island, situated in Flathead Lake.

HJR 1 (Mular, D-Butte; Kimble, D-Missoula, and others)—killed on second reading in the House

Would have requested the Bureau of Reclamation and the Energy Research and Development Administration to study the Jefferson-Whitehall unit of the Missouri River Basin Project.

HJR 15 (Turner, R-Whitefish; Jensen, R-St. Ignatius, and others)—signed by speaker and president

Requests the director of the Dept. of Fish and Game and the Fish and Game Commission to take into consideration the input of local rod and gun clubs and allied organizations and landowners, as well as the recommendations of local game wardens, in setting seasons and fish and game harvest limits.

HJR 20 (Kimble, D-Missoula; Uhde, D-Kalispell, and others)—killed on third reading in the Senate

Would have requested the U.S. Dept. of State to evaluate potential transboundary impacts which might result from the proposed Cabin Creek coal development in Canada.

HJR 21 (Fabrega, R-Great Falls; Moore, R-Great Falls, and others)—signed by speaker and president

Requests the Bureau of Reclamation and the Energy Research and Development Administration to study the Sun-Teton unit of the Missouri River Basin Project.

HJR 27 (Feda, R-Glasgow; Keyser, R-Ennis, and others)—signed by speaker and president

Declares the Montana Legislature's unalterable opposition to registration and confiscation of firearms.

HJR 31 (Fabrega, R-Great Falls)—killed in Judiciary Committee

Would have requested the Dept. of Natural Resources and Conservation to evaluate existing and ongoing studies of coal slurry pipe lines and report to the 46th legislature the costs and benefits to Montana of using water for exporting coal via slurry pipe line.

HJR 39 (Shelden, D-Libby; Cooney, D-Butte, and others)—killed in House Natural Resources Committee

Would have directed the Board of Public Education to adopt policies for establishing conservation education programs in public schools. ■

For the Missouri Breaks:
A Wild Future

by Ken Walcheck

F & G photos Dick Ellis

"TO MERIWETHER LEWIS, esquire . . . .

"Beginning at the mouth of the Missouri, you will take observations of latitude and longitude, at all remarkable points on the rivers, and especially at the mouths of rivers, at rapids, at islands and other places and objects distinguished by such natural marks and characters of a durable kind, as that they may with certainty be recognized hereafter."

Lewis and William Clark fulfilled this part of Pres. Thomas Jefferson's directive in a most exemplary fashion and far beyond his wildest expectations.

The Missouri, as documented by Lewis and Clark, was a wild river then, a sinuous giant that worked incessantly to dissipate its unlimited supply of energy. It honed new channels, destroying as well as building and reshaping islands into myriad geometric shapes. It was a river that scoured deep holes and sealed off quiet, shallow pools in C-shaped oxbows—a complex river system constantly changed by nature's age-old rhythms while being held in delicate balance by subtle mutations.

The river was as rough, brawling and raucous as an old recipe for Indian whiskey that caught my eye in the colorful historic museum at Fort Benton, Mont.:

"To muddy Missouri water add:
One quart of alcohol
One pound of rank, black chewing tobacco
One handful of red peppers
One bottle of Jamica ginger, and
One quart of black mollasses
Mix well and boil until strength is drawn from the tobacco and peppers."

Waughhhh!

AND TODAY? The Missouri of 1977 would inspire few artists. After the Lewis and Clark era, an expanding civilization swept forward on a technological tide undreamed of since Genesis. The passage of nearly two centuries and the emergence of

an industrial/technological America brought about vast changes along Lewis' and Clark's route—changes they could never possibly have envisioned. Yet, not even the most ardent environmentalist would have expected the land to remain an Eden. The very reason Pres. Jefferson sent them on their journey was to open up the wild continent "for the purpose of commerce." And that they did. Some 11 million persons now live in the six states the Missouri flows through, the accumulated progeny of eight generations of Americans who reaped their fortunes from the land. Smokestacks, power lines, shopping centers and ribbons of asphalt along the route manifest the destiny America perceived for itself.

The federal government lent its full support in helping to achieve this goal. All those sand bars, islands and braided channels were interfering with commerce. The old Missouri River Commission set to work in 1884, and the U.S. Army Corps of Engineers took over in 1902 to tame the Missouri's wanderlust ways.

And tame it they did. Take the state of Missouri as a prime example. John Madson, renowned wildlife writer and authority on the Missouri River, relates that in 1879 the Missouri River's total length in the state equaled 544 miles of free-flowing water. By 1972, that same reach of the Missouri had been meticulously carved on by the corps and reduced in length by nearly 10%. Because of channelization and pile diking (long, oblique lines of heavy wooden piles filled and buttressed with broken rock designed to deflect the current toward the center of the channel), great bends, islands and meanders were eliminated, resulting in a direct and unmitigable loss to wildlife. Madson reports, "From 1879 to 1954, the surface area of Missouri River islands in the state was reduced from 24,419 acres to only 419 acres—a reduction of 98%."

If Lewis and Clark were to pole their pirogues (large, wooden, canoe-like crafts) up the Missouri today, Yankton, S.D. would be as far as they could advance. There, they would run into the towering face of Gavins Point Dam, the first of six huge Corps of Engineers dams which have converted the upper Missouri from a free-flowing river into a series of backwater reservoirs stretching across the Dakotas and into Montana, the tail waters of each practically lapping at the face of the next. The "Great Lakes of the Missouri" impounded thousands of square miles of water, inundated thousands of acres of river valley, obliterated many prehistoric and historic sites and reduced a rich and varied corridor of wildlife habitat.

Walter Pasiczkyk, deputy state forester for North Dakota, voiced his concern in the *North Dakota Recreation Digest* (Feb. 15, 1968) as to how main stream impoundments on the Missouri had depleted large quantities of wood fiber and wildlife habitat—both vital components of outdoor recreation. He wrote, "Prior to 1950, some 120,000 acres of cottonwood timber could be found along the Missouri River in North Dakota. Now we have approximately 12,000 acres remaining between the Oahe Reservoir and Garrison Dam. The large impoundments have taken an enormous amount of woodland in the past 20 years. The loss from these two dams alone has been estimated at well over 100,000 acres, mostly prime river bottom cottonwood."

Montana's portion of the Missouri has also experienced its share of changes. West of Fort Peck, Lewis and Clark named a small falls in the river "Elk Rapids." They called it "the most considerable rappids which we have yet seen on the Missouri." It is gone now, inundated by Fort Peck Reservoir, the last and "most considerable" of the Corps of Engineers dams.

Further upstream, at the Great Falls of the Missouri, the explorers encountered a nine-mile stretch of river that dropped hundreds of feet in seething, foamy torrents over five falls and a series of cascading rapids. It was here, 172 years ago, that Lewis wrote, "the grandest sight I ever beheld . . . a sublimely grand specticle." He gazed spellbound at one of the larger falls as he wrote in his journal, read and reflected what he had written, "and was so much disgusted with the imperfect idea which it conveyed of the scene that I determined to draw my pen across it and begin again." Then he decided that a second draft would be no better and let the first impressions stand.

The falls with their mantle of white, churning water are no longer present. It was inevitable this storehouse of liquid energy would be harnessed and a large and thriving city (Great Falls) would develop at this location. Extensive hydroelectric development by Montana Power Co. (MPC) resulted in a series of five dams along the nine-mile stretch which make repeated use of each cascading droplet. Another 84 miles upstream are MPC's Holter and Hauser dams, as well as the U.S. Bureau of Reclamation's (BuRec) Canyon Ferry Dam.

CONSIDERING ALL THIS, it seems a miracle that one of the best features of the river has survived as long as it has—the Missouri River Breaks, a stretch that meanders more than 150 miles from Ryan Island, near the upper (or western) end of Fort Peck Reservoir, to Fort Benton. After more than a dozen years of study and debate, the breaks section of the historic Missouri became an official part of the National Wild and Scenic Rivers System on Oct. 13, 1976, when Senate Bill 1506 was signed by former Pres. Gerald R. Ford. The bill's long-time champion, Sen. Lee Metcalf (D-Mont.), termed passage of the legislation "one of the highlights of my Congressional career." His endeavors have assured preservation of the last free-flowing portion of the Missouri River.

The Missouri River Breaks represents one of the last remaining significant and essentially undisturbed segments of the river—the longest river in Montana and certainly one of the most important waterways in the world. On these points alone, its national significance could probably stand. But it

has more significant attributes. The Missouri, and specifically this section of the Missouri, has notable associations with the Lewis and Clark Expedition and with subsequent historical events concerned with westward expansion and development of this nation—the fur trade, the gold rush, Indian and military affairs, river navigation and the colorful era of the river steamboat.

And there's much more. This stretch of the Missouri contains what is probably the most striking scenery of its 2,500-mile course, scenery which elicited glowing descriptions by Lewis and was captured on canvas by the brush of the Swiss artist Karl Bodmer. Geologically, it tells a fascinating story, including the epic of its disarranged drainage and the cutting of a new river course because of continental glaciation. Archaeologically, the area possesses a large number of sites representing the aboriginal culture of the Plains Indians. Aesthetically, it has the power to rekindle who knows what questions, memories and hopes. No computer can truly measure the incredible intricacies of the Missouri River Breaks.

Many writers, with rich and descriptive rhetoric, have attempted to describe this unique, twisting ribbon of water that runs boldly and strongly through a dissected country that lifts in great swells to the open horizons. Nobody has fully succeeded.

One has to float the river to truly experience what the breaks has to offer. By doing so, impressions do not arrive secondhand through the medium of words. Instead, the river speaks, using words from long ago—as if it were carrying one through a time warp in which past and present are joined. And then, only then, can one fully comprehend that the Missouri is more than moving water, more than a source of energy.

Some mystic quality of the breaks country permits one to enter a fourth dimension, a space too complex for human faculties to explain or understand.

For example, a small, wooded grove rests at the mouth of Arrow Creek, a short distance upstream from the mouth of the Judith River. On the opposite (or north) side of the Missouri, Lewis and Clark pitched their May 29, 1805 camp. At the edge of the wooded grove is an old, deformed green ash, so designed by wind and decay to serve perfectly as a rest for one's back. To sit in such a noble "chair," after the sun dips below the galleries of wind-sculptured formations, is an adventure in ecstasy. The mind and ear roam at will among the noises of the night without hindrance from outside attractions. In such a setting, one can sense how it was 172 years ago when, for some unknown reason, a bull buffalo forded the river during the night and charged through the explorers' sleeping camp.

If you listen closely enough, you can just about hear the startled call of the night sentry, the frantic barking of Scannon, Lewis' large Newfoundland dog, and the noisy uproar and clamor as the explorers awakened from deep slumber. In such a spot one can feel free and without fear of ridicule address the darkness and shout, "This is but one of many adventures you will experience on your westward trek. There will be many more!" And between the whisper of the wind and the rustle of cottonwood leaves, you might hear what sounds like a report of Lewis' air gun in acknowledgment. It will be nothing more, of course, than the downstream slap of a beaver's tail.

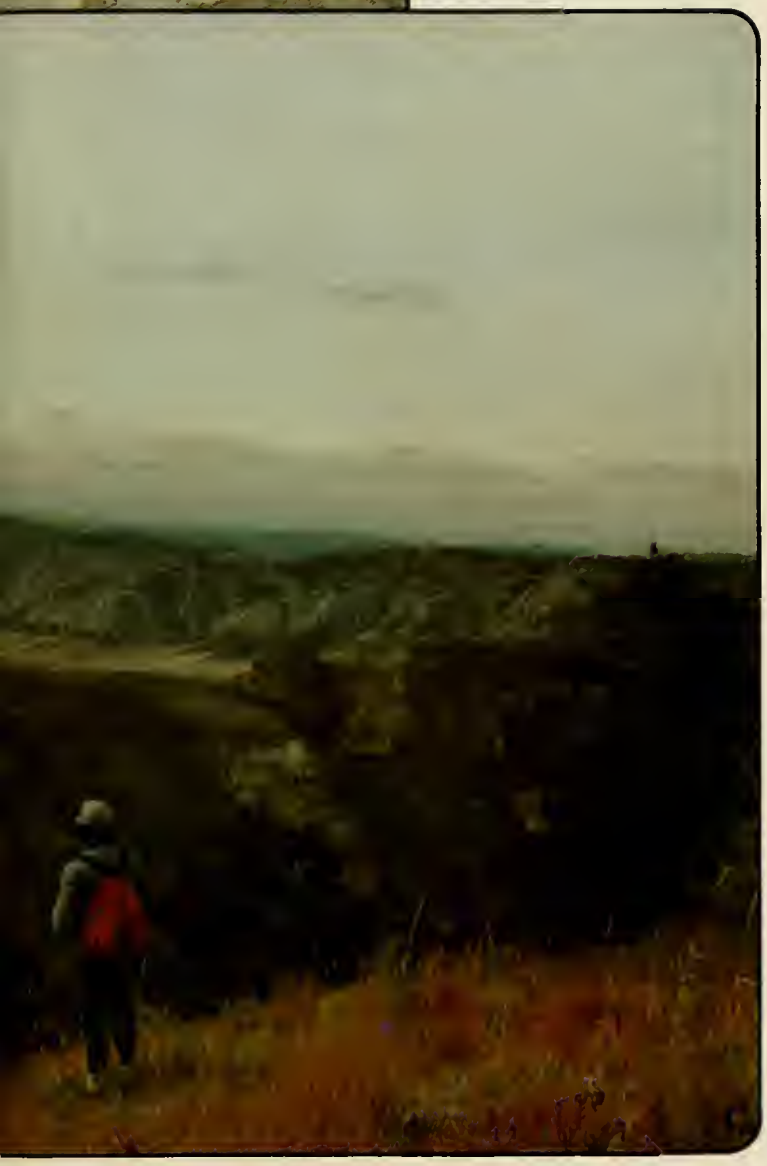
WHILE EXPLORING the historical archives in search of information on the evolutionary development of the Missouri River, I waded through a maze of microfilm, newspaper clippings, magazine articles, legislative bills, bureaucratic memos, federal information bulletins and other items. I was amazed at the wealth of information available on a wide spectrum of related subjects. Take dam sites, for example.

I studied a river map published by the Missouri River Commission in 1891 that historical buffs like to use when floating through the breaks section of the Missouri. The map identifies many of the Lewis and Clark campsites as well as other historical highlights. The map also serves as a good reference for those interested in potential dam sites. In fact, it identifies six sites: Fort Benton, Virgelle, Illiad, High Cow Creek, Heller Bend and High Rocky Point. One has to take off his hat to the early engineers as some of these same spots were seriously considered as dam sites until 1976.

Priority decisions for developing the upper reaches of the Missouri did not receive serious consideration until the early 1940s. In 1943, Col. Lewis A. Pick of the Corps of Engineers announced at an information meeting in Bismarck, N.D. that the Missouri had been neglected for too long. He also promised a comprehensive program, the Pick-Sloan Plan, a joint undertaking of the corps and BuRec which was authorized in 1944 by the Flood Control Act. Pick went on record advocating a valley-wide development plan that would halt destructive floods and provide irrigation, power and domestic water supplies. The Colonel further declared, "After the war, we know that there is bound to be a lot of building in this country and there isn't any better place to start building than right here in the Missouri River Valley."

This was no idle boast. Of all government agencies, none has had a more resounding impact on the face of America than the Corps of Engineers. Since its inception, the corps has engaged in a wide range of projects in every state. Today, it ranks as the largest civil engineering organization in the world. The corps controls more than 25,000 miles of waterways, operates more than 400 dams and man made lakes and produces more hydroelectric power than any other single firm in the nation. Americans quickly learned the corps takes a back seat to no engineering firm as a developer. As one critic aptly stated, "If you're in doubt as to who's going to win the battle, remember—the smart money usually rides on the Corps of Engineers, which is a master at whipping a

The wild Missouri Breaks (photo: Bob Cooney) and a few of the remote region's outstanding attributes—quality fishing (F&G photo: Steve Bayless), white-tailed deer (photo: Alan Nelson), great blue heron rookery at sunset (photo: Mike Crider), and one of many intriguing rock formations (F&G photo: Dick Ellis).



tired horse down the home stretch."

In 1943, a comprehensive water resources development plan for the Missouri River Basin was also announced by the BuRec. The plan as outlined by S. O. Harper, then chief of the bureau, envisioned two objectives: (1) the irrigation and conversion into productive farm land of more than four million acres in the semiarid regions of Montana, North and South Dakota, Wyoming and Nebraska and (2) construction of 14 giant plants capable of producing sufficient electrical energy to furnish postwar industries throughout the entire Midwest.

The big push for developing the upper reaches of the Missouri didn't surface until 1963. Elaborate plans for harnessing the upper Missouri were announced in a Corps of Engineers information bulletin, "Missouri River Fort Peck to Fort Benton—Joint Study." The study outlined 11 different plans by 6 federal agencies to develop this stretch of river. Proposals ranged from a three-dam power and flood control project, with an estimated cost of $441,178,000,to a National Park Service plan at a cost of $31,035,000.

Of the 11 proposals, the corps solidly backed plan 4 which endorsed Fort Benton Dam, to be built just upstream from Fort Benton Bridge, and High Cow Creek Dam, situated 23 miles upstream from Fred Robinson Bridge.

As outlined by the corps, the two dams would have cost $357 million, with an operating cost of $13.2 million that would have generated an annual income of $27 million—or an approximate 2:1 profit ratio. The proposed two-reservoir system was designed to produce hydroelectric power for integration into the Missouri River Basin power system. It would be sold in the eastern division power marketing area. Additional benefits enumerated by the corps included bolstering the local and state economy, flood control, reservoir-based recreation and future potential industrial development.

The various proposals for river development evolved into a welter of political oratory, conflicting arguments and heated debates that simmered and boiled between two factions for more than a decade. Involved was a question of comparative values. One faction emphasized development in terms of dollars and cents. It argued that multipurpose development on the Missouri was a sure-fire way for the state to increase its tax base, develop its agriculture, attract industry, develop a tourist trade and provide more opportunities for young people to remain in the state. Groups favoring such development included the Missouri River Development Assn., public power cooperatives, Montana Farmers Union, Montana Water Development Assn. and the Lewistown Chamber of Commerce.

On the other side of the fence were those groups which favored preserving the last undeveloped reach of the free-flowing river for posterity as a legacy of natural beauty and exceptional historic value. They included the Montana Wildlife Federation, Montana

Wildlife Society, Lewis and Clark Trail Assn., Montana Dept. of Fish and Game, Montana Historical Society, League of Women Voters and other groups and organizations too numerous to mention.

In 1965, the Montana Fish and Game Commission established the Montana Recreational Waterways System. Under provisions of the system, the commission could designate selected rivers as "Recreational Rivers," but this designation carried no guarantee against exploitation or development. The commission designated the Fort Benton to Fort Peck Reservoir segment of the Missouri as part of the Montana Recreational Waterways System in 1966. Some felt the Dept. of Fish and Game was usurping its authority in establishing such a system. Rep. Charles Cerovski (D-Lewistown) wrote a blistering critique of the department's stand: "It looks as though the Fish and Game Department is again heading into an area of influence that is beyond their authority. It must be confusing to our congressional delegation to receive a resolution passed by the Legislature and signed by the governor favoring construction of dams and opposing any wilderness and then in a few weeks be accosted by representatives of our fish and game commission opposing dams but favoring a wilderness area."

In 1968, the Bureau of Outdoor Recreation issued a report which recommended establishment of a Missouri Breaks National River. During the same year, Congress enacted the Wild and Scenic Rivers Act. Under the law, supporters envisioned formal protection for at least 100 outstanding waterways. Although Montana's Missouri Breaks segment was not one of the act's "instant rivers," it was included as a study river.

During this time, Sen. Metcalf was going through his share of trials and tribulations, attempting to resolve what Montanans actually wanted. In a newsletter to his constituents, he wrote, "Recently I have been asked to help get another bridge across the Missouri, raise some ferry cables, build dams at Cow Creek, either a little one or a big one, and at Fort Benton. I have also been asked to see that the upper Missouri becomes a wilderness waterway or a wild river, or a national park, or a state historical waterway, or a recreational area administered by the Bureau of Land Management, or a refuge administered by the Fish and Wildlife Service, or be left as it is. Residents of the area give me conflicting advice, and so do those outside the Missouri Valley."

In 1970, HR 17233 was introduced by Rep. John P. Saylor (R-Penn.), cosponsor of the Wilderness Act of 1964, to establish the Missouri Breaks as a recreational and scenic river between Fort Benton and Fred Robinson Bridge. The resolution was doomed because it was not fully backed by the entire Montana Congressional delegation. The final *coup de grâce* was administered when the resolution was referred to the House Committee on Interior and Insular Affairs, then chaired by Rep. Wayne N. Aspinall (D-Colo.). Here the resolution slumbered into oblivion.

IN 1971, Sen. Metcalf introduced into the 92nd Congress, S 1405, a bill "to establish the Missouri Breaks Scenic Recreation River in the State of Montana." The bill classified portions of the river as recreational, scenic and wild. Public hearings were conducted in several Montana communities to receive testimony for and against the bill. Substantial support for S 1405 was received at most of the hearings from local, state and national organizations, as well as from many private citizens in Montana and elsewhere.

At the Great Falls hearing conducted Aug. 16 of that year, 37 persons from conservation groups, the Montana Stockgrowers Assn., the Montana Bureau of Land Management (BLM) Advisory Board and numerous other groups spoke in favor of S 1405 and only 5, who favored dams or other water development on the wild Missouri, opposed it.

Those speaking for the bill came from all corners of the Big Sky country. Don Aldrich, president and spokesman for the Montana Wildlife Federation, left his vacation campsite in the Bitterroot Mountains, hiked four hours and drove eight more to present the federation's position. Lou Hagener, professor of botany at Northern Montana College in Havre, left his plant collecting site during a downpour in the Bear Paw Mountains and fought both clock and steering wheel as he drove over backcountry roads that had turned into a gelatinous sea of sticky gumbo.

During the five and one-half hour hearing, the walls of the Cascade County Courthouse resounded with eloquent statements from proponents of a free-flowing river. After sifting through 123 pages of testimony, my reflections on what had been presented on that warm August day returned to a statement written and read by Cecil Garland, then president of the Montana Wilderness Assn. He said, ". . . Every country must have its tradition. In every country older than ours, each may point to some time in its past when men did both very brave and magnificent things. If we in America today are to find a tradition and pride in our past, then we can find no finer place to start than by protecting this stretch of the Missouri and its breaks. . . . We are now in a period of great national reflection upon the mistakes of the past. Yet if the economic and social welfare of the state of Montana and this Nation depend upon the destruction of the last remnants of our wild rivers and our mountain wilderness, then I believe that there is too little and it is too late and that we have developed an insatiable appetite that will end in the total impoverishment of our land and our people."

Opposition to S 1405 was voiced by the Montana Farmers Union and the Montana Water Development Assn. William Spoja, Jr., a Fergus County attorney representing the Missouri River Development Assn., presented an exhaustive argument against doing anything with any stretch of the Missouri, except using the natural resource for an "economic shot in the arm" for central Montana. He

asserted the people of central Montana had watched other areas grow and develop while they awaited their turn—" . . . their patience is exhausted; their wills are fast becoming hardened."

Opponents to Sen. Metcalf's bill centered their attention on population losses in central Montana and loss of potential opportunities in the areas to be affected by the proposed river breaks bill. A Lewistown housewife said her son had been forced to re-enter military service because of lack of employment opportunities. A Big Sandy resident said, "I think we should ask our children if they think they can survive on recreation." A representative for the Montana State Farm Bureau Federation said his organization was opposed to any proposal which would prevent economic development.

The reaction in Lewistown to S 1405 was a paroxysm of incredulity by the dam backers. An editorial in the Lewistown News-Argus, titled "Metcalf, Blah!," said, "Sen. Lee Metcalf has done a complete turnabout and stuck a sharp knife in the back of central Montana residents. It is our desire that he take his bill and shove it up his nose."

Despite the overwhelming support for S 1405 and the fact the dam proposals had been judged economically infeasible by the federal government, the bill failed to pass. Most of the discord centered around: (1) lack of provision in the bill for constructing a bridge across the river near Winifred to accommodate the flow of north-south traffic through the area and (2) uncertainties as to which agency, the BLM or the National Park Service (NPS), would manage the area. Farmers and ranchers also feared a land grab by the government, prohibitions on agricultural rights and questionable restrictions on withdrawal of water from the river for agricultural purposes.

In 1973, during the 93rd Congress, Sen. Metcalf tried again by reintroducing the legislation, this time in the form of S 1009. The bill was read twice and referred to the Committee on Interior and Insular Affairs where it finally died.

During the same year, Montana lawmakers decided to introduce their own wild rivers bill. Rep. Harrison Fagg (R-Billings) introduced HB 133, the Wild and Scenic Rivers Act, which immediately became quite controversial—a "hot ball of wax," as one legislator put it. The bill would have empowered the Fish and Game Commission to manage a system of wild, scenic, natural and recreational waterways in the state. In addition, the bill specifically classified five sections of the Missouri River as wild and scenic waterways. Following an extensive review and discussion, the bill was finally tabled as a holdover bill because it contained too many loopholes that threatened agricultural concerns.

In 1974, HB 133 was tamed by a select house committee and redrafted in a form believed to be more palatable to highly skeptical farmers and ranchers. The new version, the Pastoral and Scenic Rivers Act, listed no specific rivers and proposed that rivers could be added under provisions of the bill only by conservation districts or the legislature. Conservation districts were to have management authority over such rivers, including administration of the floodway and subdivision regulations, and control over floating trips, camping and other recreational uses, including authority to charge a fee for such uses. The controversial bill failed to generate any major support and was defeated.

With steadfast determination to preserve the last remaining stretch of the wild Missouri, Sen. Metcalf again reintroduced legislation into the 94th Congress in 1975 as S 1506. It was a bill to classify the Missouri River Breaks segment of the river, under provisions of the Wild and Scenic Rivers Act, into various categories—wild, scenic and recreational. The bill provided authorization for acquiring fee title to no more than 180,000 acres, providing rim-to-rim protection on both sides of the river.

S 1506 was modified and tailored to meet the legitimate needs and desires of those persons most affected by the bill. Provisions were included for continued grazing and water pumping rights, a bridge across the river, overall BLM control and minimal impact on private land. The bill also contained provisions for the NPS to construct and maintain a visitors' center at Fort Benton which would put the river in proper perspective for tourists and potential floaters. The NPS, however, would not have official functions within the river corridor, nor would overlapping federal jurisdiction exist within the corridor.

A Congressional field hearing on S 1506 was conducted in Billings Aug. 25, 1975. Nearly 200 persons attended the hearing and proponents of the bill far outnumbered opponents. Sharp exchanges in the otherwise calm testimony of witnesses came during a statement made by Ken Byerly, president of the Lewistown News-Argus.

Byerly scored Sen. Metcalf for his continued pressure to deflate opposition to the wild river classification by conducting the hearings too far from Lewistown. He further charged the Montana Senator once favored development of the river but had switched positions and avoided central Montana for years because of a "guilty conscience." When tempers calmed, the Lewistown newspaperman continued to castigate a meddling Congress, nosy professors, pesky students, government bureaus and troublesome city folks for trying to interfere with the rights of private landowners adjacent to the river.

A private citizen from Conrad countered, "The bill is right; Sen. Metcalf is right. Man may have his last opportunity, at this place and at this time, to do what is right."

AND THIS TIME, the time *was* right. In November 1975, the Senate Interior and Insular Affairs Committee unanimously recommended enactment of S 1506 and the bill was passed by the Senate in December. Rep. Max Baucus and then Rep. (now Sen.) John Melcher (both D-Mont.), who had confidence the Missouri Breaks bill would pass,

steered the bill through some rocky moments in the House. As Sen. Metcalf later said, "The bill arrived in the House Interior Committee in December of 1975 and did not achieve passage until almost literally the final hour of the 95th Congress in October of 1976. When the measure could have been pushed (in the early months of 1976), it was not; when it was finally pushed (in the later months), retiring subcommittee [National Parks and Recreation Subcommittee of the House Interior Committee] chairman Roy Taylor of North Carolina appeared to be indifferent, lumping the Missouri in an omnibus bill with several rivers which had not even had the benefit of hearings. If one of those segments had failed, the entire bill would have been lost. I felt several times that it was lost." But the House passed the legislation on Sept. 28 and the President signed it Oct. 13, 1976. Signing of the bill represented a beautiful and everlasting bicentennial gift to all Americans.

I do not have space to identify the vast number of persons in Montana—or for that matter, across the nation—who gave their full support to make this dream of many years become a reality.

First and perhaps most important, mere words will never adequately express the appreciation and deep feeling of gratitude toward Sen. Metcalf. His persistent efforts on the Missouri's behalf are now legend, but we will all remember his monumental contribution as the river winds its way into the future. The efforts of his aide, Teddy Roe, also deserve special mention. Possibly a brief note to the Senator from those who desire to express their thanks would somehow tell him how we feel. Naturally, when the roll call of Congressional support is made, it must also include the names of former Sen. Mike Mansfield, Sen. Melcher and Rep. Baucus.

Gov. Thomas L. Judge also lent his active support to the Missouri's classification.

Next on the list come a few of the individuals, but by no means all, who wrote letters, attended hearings or otherwise did their part. People like Steve and John Gilpatrick, ranchers near Hilger; Don Aldrich and John Harris of Missoula; Ray and Dorothy Nitz, Gary Stuker, Van Barron and many other members of the Hill County Wildlife Assn. in Havre; Lyle Leeds, Havre radio station owner and past president of the Montana Chamber of Commerce; Lou Hagener and Emmett Stallcop of Havre; Tom and Les Hartford, R. L. "Hap" Kramlich, Craig Flentie and other members of the Lewistown Rod and Gun Club; Jack Lepley, Bob Singer and others in the Fort Benton area; Gail Stensland, formerly of Fort Benton; Jack Severns, Margaret Adams, Harry Mitchell and others from Great Falls; Bill Cunningham, formerly of Helena; Phil and Robin Tawney of Helena; Liz and Eldon Smith and Perry Nelson of Bozeman; Gay Easton of Laurel; Ann Sutton of Friends of the Earth, and Arch Erskine (deceased) of Missoula. Collectively, the Montana Wildlife Federation and its members took the lead years ago for the Missouri, but the Helena-based Environmental Information Center, Sierra Club, Audubon Society, The Wilderness Society, Lewis and Clark Trail Heritage Foundation, Montana Historical Society and the Community Improvement Assn. of Fort Benton also played active roles.

In the Dept. of Fish and Game, many individuals played a role and did their part to preserve the river. Many of these people remained in the background and probably would prefer to remain unnamed. But their many articles, letters and presentations certainly must be recognized as an important contribution to the final outcome of Congressional action.

Past fish and game commissions and commissioners also deserve credit, but the efforts of one commissioner, Joe Klabunde of Havre—both as an individual, a former and current member of the commission (now chairman) and as a member of the Hill County Wildlife Assn.—deserve special mention.

The next step for the Missouri rests with the BLM which now has authority over management of the river's environs, as specified in S 1506. We trust the BLM will implement a policy which retains these values for which we all fought so long and hard.

* * * * * *

DURING THE SEVERAL WEEKS of writing this article about the Missouri River Breaks, I got into the habit of staring at a large Charlie Russell print on the wall in front of my desk that the famed western artist called, "Wagon Boss." It portrays the wagon boss sitting astride his stocking-footed roan on top of a bluff overlooking Fort Benton and the Missouri River and watching teams of oxen pull heavy freight wagons up a steep and dusty trail.

At certain times, I found myself mesmerized by the painting and it served to release my sedentary, desk-engendered restlessness, clear my head of broken sentences and jumbled thoughts, sort out my reflections about Lewis and Clark, Missouri River legislation, dam builders, float trips, priority decisions, editorials and bureaucrats.

During one such "break," I was swallowed up in the past and I thought, for no reason that I can explain, of a warm July morning during America's bicentennial, when I hiked to the Cow Island rifle pits with a group of Northern Montana College students. It was here Chief Joseph and his retreating band of Nez Perce warriors skirmished with some soldiers after raiding an army supply depot on the Missouri. As I hunkered in one of the pits, I saw a lark sparrow crouched in its nest under a sagebrush plant. As I watched the sparrow, I thought of a question one of my sons had asked me several years ago—"Can you tame a wild bird?" I answered that in some cases it was possible, but yet this was not the way with wild things.

Yes. And man must also be free. There are places like the Missouri River Breaks where man can find the richness of experience, the greater realization of life—considerations difficult to define because they are intangible, but which are vital to our well-being as individuals and as a nation. ■

Dear F&G

Mention Motorbikes and You Have a Controversy

I'd like to reply and retort to the letter written by Joy Lewis in the Jan./Feb. 1977 *Montana Outdoors*.

Obviously, Joy has had some distasteful experience with motorcycles at one time or another, as have many of us. Unfortunately, a few can spoil it for all, as is the case with 4x4ers, snowmobilers, motorcyclists, horsemen and backpackers.

I have seen refuse scattered along the trails of the mountains by backpackers, manure a foot deep in the trails left by horses, been outraged by the tracks of a 4x4 left in the soft earth and infuriated by the noise and dust of motorcycles going through my camp. I enjoy the outdoors and believe in proper use of it by all of us who enjoy it—but use without abuse of the land and others around me.

Many people, and Joy among them, probably have said, "I wish it were the way it was 50 or 100 years ago." Most of the roads and trails that Joy saw from the top of that mountain were there 50 or 100 years ago, in fact probably more. Those were roads and trails used by miners and prospectors in the late 19th and early 20th centuries. Some have remained, but many have become overgrown and been abandoned.

A properly equipped motorcycle would have hardly been noticeable to the backpackers. With an approved muffler and spark arrester, which is required by law, the bikes would have been quite quiet. With trails tires they would hardly have left a track. The motorcross or street machine that most of us see is not at all at home in the mountains. It is noisy, hard to handle and lacks proper power and maneuverability for mountain travel. On the other hand, "trails" or trail bikes are light, quiet, maneuverable and have the low end power necessary for mountain trail travel.

I have talked with many backpackers and horsemen in the mountains and none of them seemed upset with my choice of transportation. In fact, when they see me cross a two-foot-deep stream, jump an 18-inch log lying across the trail, go up a rock ledge or maneuver through a rocky set of switchbacks without so much as putting a foot to the ground, they are usually quite envious and question me in detail about my trail bike.

I have found that abuse of the land and people is not caused by the mode of transportation. It is caused by the operator and what he does with his equipment.

As for the game—I don't believe the motorcycle has had any more to do with lack of it than has the backpacker. We have ridden right up to and past herds of deer and elk. Unless we got off our bikes and started walking around, they usually didn't become frightened. The reason we don't see the game any more is there just isn't as much as there used to be.

Let's face it; it isn't the motorcyle that breaks the peace and solitude. It's people, more and more people. If Joy wants to get away from the mechanized world, there are many primitive and wilderness areas set aside in Montana. But in crossing from the Absaroka to the Beartooth, don't be surprised or disgusted to see me winding my way up a trail, enjoying the mountains as much or more than anyone there. I'll stop and say hello and in a few minutes be on my way again, soon to be out of sight and sound. If Joy takes my trail, there will be no horse manure to gingerly step around, beer cans or waste paper left by me.

If you think our local motorcycle clubs don't give a hoot, talk to some people from the Yellowstone Trails Club, Billings Motorcycle Club or the American Motorcycle Assn. I'm sure you will find we all give a hoot. That's why we are members. —*Al Spencer, member, Yellowstone Trails Club, American Motorcycle Assn.; Billings, Mont.*

In regard to the letter Joy Lewis of Basin wrote in your Jan./Feb. 1977 issue, I also hate seeing roads all over the mountains, and I like being away from other people and love seeing game. But in reality, there were roads and trails all over the Tobacco Roots 75 years ago because of the mining. Fact is, the trail she "panted, sweated, laughed, groaned" up is one of them, and with the ever growing population, it is getting harder to find

courtesy of *Earthwatch Oregon*, a newsletter of the Oregon Environmental Council

recycled paper

"paradise" away from other people.

I have walked most of the trails on the east side of the Tobacco Roots, but the only game I have seen from the trails was when I was riding my trail bike and I hardly ever ride from Potosi to Hollow Top without seeing game. The only time that game is afraid of me is when I am off my bike, so maybe that is the reason she didn't see any. There are thousands of acres in the state set up for backpackers to get away from motorcycles, etc., but very few people ever go there.

Next time, Joy, why don't you "hoof it" into the Selway-Bitterroot, Bob Marshall, Anaconda Pintlar, Spanish Peaks, Beartooth, Absaroka, Missions, Glacier or Yellowstone and don't try to take away one of the few places left for people who march to a different drummer than you do. — *Larry Willard; Bozeman, Mont.*

At a recent Forest Service workshop for the Elkhorn Wilderness Study Area, I became acquainted with a group of people who believe they should have the right to go wherever they please on motorbikes, snowmobiles, 4-wheel drives, all-terrain vehicles, motorboats, etc. Where are people coming from today? Perhaps unglued from their TV's for an evening to live up to everything (commercially and all) they've seen.

With so little unspoiled high country left, so many new babies being born and so much land and air now being used by all sorts of mechanized, motorized contraptions, why can't 82,000 acres be left for those living things that already inhabit the area and for those people who enjoy and need a little peace of mind.

Those who have hiked throughout the Elkhorn Mountains area know the kind of spiritual, mental and emotional serenity that is found there. Solitude: a place, a space in time where anyone can go and be alone, be at one with nature, at one with themselves.

Those who also have hiked the Elkhorns or any other high country area know the hatred, rage, frustration and disappointment they feel when 20 snowmobilers come ramming up a beautiful, quiet, snowy trail or watch motorbikes rip through the woods and climb mountain peaks in total violation of Mother Nature as well as off-road vehicle laws.

Where and when does the line get drawn? And, if it doesn't, will people be able to pay the price?—*Joy Lewis; Basin, Mont.*

Environmental Stand Praised

In reference to a letter from Gerald Halley, "Loggers Buy Licenses," in the March/April 1977 *Montana Outdoors*, I feel Mr. Halley is possibly being a little close-minded. His letter simply states that *Montana Outdoors* "has become a mouthpiece for the Sierra Club or other radical environmental groups . . . instead of being a publication intended for all sportsmen. . . ."

To tell you the truth, I wasn't a bit surprised to see a letter like this in respect to the magazine's recent publications. I figured the magazine was getting feedback of this type concerning its stand on environmental issues. But after a little research into the last 10 issues, I have discovered that *Montana Outdoors* is very well designed for the sportsman both directly and indirectly.

I put each of the articles in the 10 recent issues into categories. The categories I selected should illustrate the points I am trying to make. I tried not to be biased:

—30 articles concerning hunting, trapping and fishing in Montana;

—27 articles containing biological facts on game animals;

—40 articles concerning Montana's natural resources, its environment and historical facts, and

—15 articles concerning nongame wildlife.

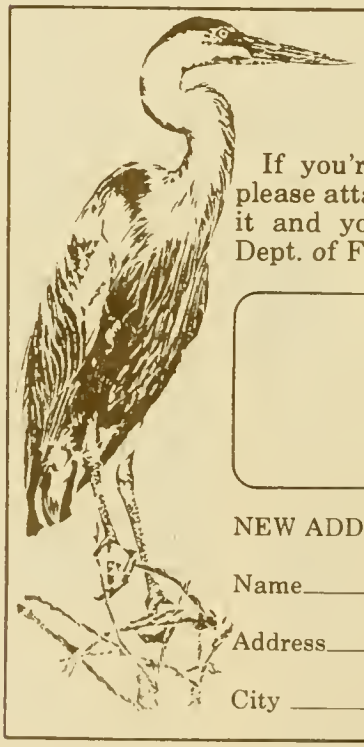
Some of the articles cover more than one of these categories.

So, it is apparent that at least one-half of the articles directly covered the subject of hunting, trapping, fishing and game animals (illustrated by the first two categories).

I next asked myself if the couple of major articles per issue covering Montana's inorganic natural resources and man's use of them deserve a place in a magazine paid for mainly by sportsmen. Basic biological and ecological science illustrate how the environment and wildlife interact. Presently, man is affecting this natural interaction excessively by direct disturbance of Montana's natural resources. The sportsman should be aware of these practices.

For example, if there is a proposed dam site on a blue ribbon trout stream that meanders through prime white-tailed deer habitat, it would be the position of the Montana Dept. of Fish and Game to publicize the issue through the use of its own magazine. Thus, publishing an article on such an issue would be indirectly very beneficial for the sportsman. It would be difficult for deer to survive on the bottom of a reservoir which is filled with water and it would be equally difficult to hunt them under these conditions.

A sportsman should be highly concerned with issues which pertain to the possible destruction and harmful manipulation of prime fish and game habitat. Of course, with this concern,



Moving?

If you're planning to move in the near future, please attach the label from your last issue and send it and your new address to *Montana Outdoors*, Dept. of Fish and Game; Helena, MT 59601.

NEW ADDRESS:

Name_____

Address_____

City _____ State_____ Zip_____

the sportsman might find himself leaning toward the environmental side of several state issues. And what would be wrong with that?

If the question were asked, I would think that there is a large percentage of sportsmen who are pleased to be labeled as environmentalists. A sportsman who is concerned about the environment has to "buy licenses and tags . . . and pay taxes" just like a logger/sportsman.

Perhaps a reader of *Montana Outdoors* who is seeking dramatic, saga-type material is reading the wrong kind of magazine.—*Gary Baxter; Missoula, Mont.*

One-Sided Attitude

I just would like to say that I appreciate your articles on Montana wildlife. What I don't appreciate, however, is your one-sided attitude regarding most environmental issues. The worthy county attorney from Big Timber stated my thoughts very ably in his letter in your March/April 1977 issue.—*Charles Horak; Dutton, Mont.*

Record Whitefish Goes Unrecorded

I just finished reading "A Worthwhile Adversary" (on whitefish) in the Jan./Feb. 1977 *Montana Outdoors.*

I was amazed to read that the largest known mountain whitefish taken was 4 lbs., 7 ozs. and the Montana record is 4 lbs., 2½ ozs. Last summer (August), I landed a 4 ¾-pound whitefish. I took him from the Big Hole on 4-pound monofilament. It required about eight minutes to land him. I weighed him immediately with my "De-Liar" (which weighs a bit light). I really had no idea I had caught a record fish. I've heard any number of fishermen say they have caught 6- to 8-pound whitefish.

Unfortunately, my wife was the only witness to my weighing, so I have no out-of-family witnesses.

On the same day, I landed three more whitefish between 3 ½ and 3 ¾ pounds. I guess there will never be another whitefishing day like that.

Just in case I land another record whitefish, what is the procedure for getting the fish officially recorded? — *W. D. Ennis; Butte, Mont.*

• *Refer to the article listing Montana's fishing records in the May/June 1977* . Montana Outdoors.—Ed.

Special Yellowstone Issue Praised

I have just finished reading the special issue of *Montana Outdoors* on the Yellowstone River. I would like to commend and congratulate you for issuing this publication which so clearly states the complete history and life cycle of a free-flowing river such as the Yellowstone. The contributors and those responsible for the various studies have done a marvelous and thorough job describing the conditions, the problems and some of the solutions— and hopefully the salvation of the Yellowstone. I sincerely hope the Yellowstone will be saved for future generations.

I have fished the Yellowstone with varied success over the years, never having caught some of the big ones, but satisfied to just be in God's country where the air is clean and the water blue and clear. Loss of this river to industry or other uses except the natural environment would be a monumental loss to Montana, the United States and the world. There is only one Yellowstone River. May it always be thus. Damming this river would destroy the many facets and benefits of a natural river.

If this river has to be sacrificed to civilization and human progress, may it be governed by the Sierra Club motto: "Not blind opposition to progress, but opposition to blind progress."

Thanks so very much for this wonderful issue on the Yellowstone River and for bringing it to the people who have much at stake. It is a real credit to the Dept. of Fish and Game.—*LeRoy Seyhers; Spearfish, S.D.*

I agree with you wholeheartedly that the Yellowstone should not be dammed, nor should there be as much water withdrawn as is being done. There will be a terrific amount of wildlife destruction occurring if this is allowed. I have only seen the river once and I think that it is magnificent.

The rivers here (Missouri and Sun) are dammed or are going to be.—*C. J. Clark; Sun River, Mont.*

I recently took time to read two articles in the special issue of *Montana Outdoors,* "What People Think" by Bill Pryor and "Time for a Decision" by James A. Posewitz. I want to tell you that this "outsider" shares your concern.

Too often, resources are removed with little thought of the harmful techniques employed. I am 21 years old and for the past 10 years or so, I have fished an untamed trout stream in Wisconsin, the Brule River, of which I'm sure you're aware. My feeling for unrestrained development is, therefore, totally negative. Thank you for your example.—*Dan Mundt, Jr.; Duluth, Minn.*

In the couple of years I have been reading your magazine, the special issue on the Yellowstone River is the first one I can say I enjoyed totally. Rather than a "Montana is going to the dogs" approach, with which I agree but am not always sure where to go next, you presented a thorough and unemotional review of every facet of the problem.

You left me where I should be, believing that Montana coal can and must be mined without affecting the river.—*Allen Ledyard; Grosse Pointe Farms, Mich.*

Enclosed is a poem, written in the 1960s, when a member of our Congressional team suggested that the Yellowstone be dammed. The poem was sent to him. Since, he has been most helpful in thwarting attempts by the federal government to build a dam. Perhaps the poem changed his opinion:

They'd chain the errant water boy
To keep him well in hand
So that their view
Is clear and blue,
All lined with seashore sand.

They'd build a dam and so contain
This vital water source
With kilowatts
And touch-me-nots
To decorate his course.

They'd play God with the
Yellowstone,
Just tamper, poke, and maim
Manipulate
And allocate!
You know the "numbers" game.

Do they know of the years he kept
us alive
When the Lord could find no rain?

continued

When we sucked his blood
From the silt and the mud
Our effort was never in vain.

Well, tell those who make those
schemes and plans
To curb the Yellowstone's might,
Their smart engineers
Will know toil and tears
If the Yellowstone chooses to fight.

He was thrust from a caldron
of molten rock
Deep down in the womb
of the earth.
His color was grey
As a bleak winter day;
He looked as if dead at birth.

He tumbled into a cradle of blue
Where, nursed by the sun and snow
He grew to such strength
They all knew, at length
He would have a white cap
and he'd go.

He slashed and lunged through
the granite rock
And he swirled by a pillared knoll.
The red and blue clay
He swept from his way,
But he quenched his thirst
from the coal.

Well, he won the battle
against the land
And he met the fair lady Missou,
But he's trying to hide
A hurt deep inside
For the insult was never his due.

Think, if you can, of a
stouthearted man
And how it would rankle and shame
To have fought clear from hell
For the lush prairie belle
He has wed; and he's known
by her name?

—*Patty Kluver; Forsyth, Mont.*

Difficult Solutions To Weed Problems

I read Noel Rosetta's article, "The Weed Control Follies," in the Jan./Feb. 1977 *Montana Outdoors* with much interest and would like to point out a few follies:

(1) The statement that 55 Montana counties have similar weed control programs (compared to Lewis and Clark County) in terms of annual budgets is ridiculous. Teton County operates on roughly half that much.

(2) Our weed supervisor knows a great deal about plant identification and habitat management.

(3) Likewise, annual employes are screened intensively by a comprehensive exam which covers plant identification, spray technique and nontarget plants.

(4) Persons selected to work on weed control projects are further trained in the classroom and in the field.

(5) Our weed board has representatives trained in wildlife, range management, modern farming techniques and weed control.

(6) Teton County doesn't practice or condone blanket broadcast spray programs.

(7) Currently, we are conducting limited experiments with biological control agents in order to reduce future chemical application.

(8) Several counties and Forest Service officials in the area are considering a weed-free hay program to encourage producers to ship clean feed in and out of the state as well as use of weedy hay in our wilderness areas.

(9) Only plants that have a detrimental economic impact on our area are placed on the noxious weed list.

Mr. Rosetta surely does have some basic logic in his arguments, but what of a solution? What exactly is legislation that dictates the new logic of creating ecological barriers of diverse, climax vegetation? Painting a gloomy, villainous picture of weed control is a simple task; a solution to the problems that every county weed board has recognized for years is much more difficult.

Perhaps state fish and game lands should have responsibilities for weed control similar to the highway department's. It is hardly practical for state highways to control weeds when fish and game lands across the fence are allowed to supply a constant seed source to areas that have been managed.

Finally, I would like to emphasize that weed control is not the primary goal of our noxious weed program but rather a concentrated effort at weed prevention.—*Gary Olson, Teton County Weed Board; Choteau, Mont.*

Big Cloud Over Buck Creek

I have always wanted to become a resident of Montana, but due to a thing called wife resistance, I have not been able to fulfill this desire. So I have done the next best thing—vacationed in Montana. In the last 17 months, I have visited your wonderful state 3 times, the most recent visit being a 3-week vacation this past September. I never cease to marvel at the beauty of the Treasure State and I can't help thinking: Do Montanans actually realize what a treasure they really have?

Enclosed you will find two pictures that I took during my most recent stay. They show Buck Creek which is situated in southwestern Montana. Although not a blue ribbon stream by fishing standards, it certainly is so in regard to scenic beauty and purity of its water which supports native cutthroat trout. This stream, like so many streams before it, has an ominous cloud hovering over it. Logging is the name of the cloud. It is my understanding that the loggers are going to harvest timber there and together with bulldozing a road into this area, this certainly will have a most devastating impact on the area. Buck Creek will no doubt be rendered sterile. If I ever saw a frail ecology, that certainly is an outstanding example.

Taylor Fork, a nearby stream, already is feeling the effects of clear-cutting. It is not my hope—it is my prayer—that the clearing of timber in the Buck Creek locale will not happen. I live some 2,000 miles from the Gallatin country and am only a visitor annually, but I love Montana every bit as much as the natives of the state. Keep Montana beautiful.—*Stanley Popowicz; Quincy, Mass.*

Tolerance Needed for Grizzly Bears

I attended the public hearing held in Missoula recently on critical grizzly bear habitat and was appalled at the great number of industrial spokesmen who gave oral testimony. Most were against the designation of bear habitat, generally because of self-interest motives. I feel that, with few exceptions, greater industrial use of the natural resources of this area can only bring about greater bear/human conflicts in the future.

I wish to make several points:

(1) The general range and habitat requirements of the grizzly bear are still largely unknown and therefore open to considerable debate. I feel that until they are known, we must provide the grizzly with as extensive a range as is possible. We can always readily adjust our boundaries at a later date after we are better informed about the bear.

(2) Many industrial uses of the region can be shifted to other areas where bears don't exist. Bears need large expanses of range. Access from logging, mining and subdivisions will bring bears into conflict with humans

with greater frequency. This is to be avoided.

(3) No one can state that grizzly bear numbers are now sufficient to insure long-term survival of the species. Perhaps the estimated 800 bears remaining in the wild may not be enough to provide a viable gene pool.

(4) There are many ways to deal with trouble bears. One can always shoot them, but more desirable would be to transplant them into areas where they have habitat, but don't exist today. For example, the entire Idaho primitive area once supported bears and could do so again.

(5) Bears have been a subject of controversy in the two national parks where they are found. Many people wish to eliminate the bear so the parks are safe. I feel the bears are an integral part of the park experience. There are many other areas where people can camp, hike and fish where the grizzly does not exist. These parks were made safe years ago and now are much less interesting. The opportunity to see a grizzly bear in the wild should be one of the unalienable rights of citizens of the United States, as well as the world. In Glacier National Park, death by grizzly bear ranks 11th. Drowning accounts for many more deaths than grizzlies, yet no one insists that swimming in the parks be eliminated.

(6) Many of the areas delineated as bear habitat may only be used sporadically by the bears. Nevertheless, these areas may be important to other species such as elk and deer. These animals provide an important source of protein for bears in all seasons of the year. Any substantial decrease in their numbers may well affect grizzly numbers or interrelationships. For instance, a lack of carrion in spring may turn a bear to domestic livestock for food.

(7) If we make errors, we should make them on the side of the bear. Each year we spend waiting for definite information about the bear means that potential and existing habitat will be eliminated. It can't be re-created. Man has not yet learned to create grizzly bears. If other valuable resources exist amid the bear's range, those resources can be extracted at a later date if that is necessary. We can always cut the timber in 20 years if national interest demands. We too often try to accommodate man's activities to the bear's requirements. Our entire history has been one of compromise to the bear's disadvantage. Once 10,000 grizzlies roamed California; now none exist. They were compromised out of existence. We need to develop a tolerance of the bear as it seems to have developed toward us (as the many visitors who see it in Yellowstone and Glacier can attest) and recognize that the best way to insure its survival is to leave it large tracts of wild country in which to roam.

Man's heritage is poorer for every species we eliminate from the earth through our greed and self-interest. The extinction of any species is a great crime against the earth and man himself. —*George Wuerthner; Missoula, Mont.*

What About Nongame Wildlife?

graphics: Vern Craig

Nongame wildlife—are Montanans willing to support the existence of these species, so that all citizens of this state can enjoy the presence of this wildlife? How many of us are aware of the house sparrow, starling, white-breasted nuthatch, black-capped chickadee or red squirrel that might be found in our back yards? How many of us are aware of the American kestrel, rock wren, burrowing owl, prairie dog or gopher that might be found in the vast environment which surrounds us? How many of us care enough about nongame species to assure their future in Montana?

Granted, certain nongame wildlife creates problems for man. The feed lot manager knows of the problems with starlings; the rancher knows of his with gophers. The home owner knows of his when bats reside in his attic.

Looking at the other side of the coin, man has created problems for certain nongame wildlife. The Federal Endangered Species list is overwhelming. For these species and others, man is willfully or unwillfully depriving them of their right to exist in their chosen habitats.

The Montana Dept. of Fish and Game has a program which provides Montanans with the opportunity to insure the well-being of nongame wildlife. Lack of citizen interest has hampered the department's efforts to get its nongame program off the ground. How many of us know of this program? How many of us care enough to become informed or contribute to the program by purchasing fish and game's nongame certificate?

I am appealing to the citizens of Montana to seriously ask themselves what stand do they want to take toward nongame wildlife and nongame wildlife programs. If we have no stand now, we may have no nongame wildlife in the future.—*Ron Paulick; Billings, Mont.*

Support Magazine

After reading the Great Falls Tribune editorial, "Honest Tourist Magazine," printed April 28, 1977, we

feel a letter in support of *Montana Outdoors* as a quality magazine is in order.

As librarians, we depend on your magazine for much information concerning wildlife, environmental issues and economic activities within these areas as well as aesthetic appreciation for the natural resources of our state. *Montana Outdoors* furnishes this kind of information in an objective, well-written, well-documented and well-photographed way.

We support your magazine and hope that it may continue dealing with issues so important to Montana.—*Mary Lou Johnson, librarian; Imogene Johnson, library clerk, Paris Gibson Junior High School Library; Great Falls, Mont.*

An Unbiased Look At Coal Development

This letter is in response to the article, "A Day at Decker," in the Sept./Oct. 1976 issue of your magazine.

Thank you for publishing an article giving, for the first time in your magazine, at least a partially unbiased look at development of Montana resources—in this case, coal.

The vast majority of Montana residents are very much in favor of preserving the beauty and ecology of the state. Most of us also recognize, however, that nothing can remain the same as it was several hundred years ago. The challenge is to grow and develop, while at the same time taking all possible precautions to preserve Montana's natural wonders.

The needs of the people must be considered, not just the needs of animals and plants. There must be a balance between the desires of ecology groups and the legitimate right of every citizen to have a job, make a living and be able to obtain what he needs to live in reasonable comfort.

When things get out of balance and development is constantly opposed and defeated, you have the situation which we have in the state today—our youth mostly leaving to go to other states which allow some development and consequently have jobs to offer. Also, this creates a very burdensome tax situation for property owners, since such a large proportion of land is owned by the government and is therefore not taxable.

I know you will receive hundreds of letters from ecology groups criticizing the Decker article. These groups are well organized. Those of us who are just private citizens and taxpayers are not organized and our voices may not therefore seem as loud to you. But actually, we are in the majority and have a right to fair and unbiased reporting in a magazine like yours. After all, as private citizens we are paying the expenses of a government agency such as yours.—*Helen and Alfred A. Leadbeater; West Yellowstone, Mont.*

New Handle on CB's

While out camping a few days back, we heard on the radio of an interesting project going on in Iowa.

CB units—of which there are many thousands all over the United States—are being organized into a group called "Ears." The group will report traffic accidents or tie-ups, hunting and fishing accidents or violations, etc. This type of group could be used by sportsmen all over Montana to aid them in policing themselves or for many other emergency uses.

We do not own a CB unit, but figure on getting one after the new channels are put into use. We would certainly be interested in something like this group.—*Howard O. Palmer; Great Falls, Mont.*

Present Both Sides Of Issue

I read with interest "Absaroka-Beartooth: Whose Right-of-way?" in the Jan./Feb. 1977 issue, and the letter by Kenneth R. Olson, Sweet Grass County attorney, published in the March/April 1977 issue.

I, too, find it curious that the Dept. of Fish and Game should apparently support a reduction in access to a very large area of public land, while at the same time purchasing access rights in other areas.

I also tend to agree with Mr. Olson on the larger issue, i.e., the tendency on the part of *Montana Outdoors* toward biased reporting. I do understand that all reporting is essentially biased, but I sincerely believe that as a state agency, and in the best interest of your readers, that issues addressed in the publication should be presented more accurately and fairly.

Another case in point was a recent article, "A Day at Decker" (Sept./Oct. 1976), regarding coal mining near Decker. While I am not an expert on the subject of coal mining or reclamation, I believed in reading the article that there was very little attempt by the author to put the impact on wildlife into perspective. As an example, the author may have compared the estimated number of wildlife affected in the mine area to the number of wildlife in the county, or even the township. The author might also have pointed out the 20-year old Knife River coal mine near Sidney as an example of reclamation success.

Certainly, *Montana Outdoors* should address controversial issues. It is also your responsibility, in most cases, to take a position. In doing so, please endeavor to present both sides of the issue accurately and fairly. I enjoy the magazine very much. The articles are timely and informative and the photography is great.—*David Larsen; Billings, Mont.*

Enchanted Visitor

This past summer, I was an enchanted visitor to your fine state. Your magazine, *Montana Outdoors*, was nearly as enchanting as the wonderful Montana scenery.

Thank you for your excellent publication.—*Stuart Fryer; Austin, Tex.*

Book Reviews

CHALLENGE OF THE TROUT, by Gary LaFontaine, Mountain Press Publishing Co., Missoula, Mont., 1976, 243 pages, $12.95

"Challenge of the Trout" is a book on fishing with flies—dry flies, nymphs, streamers and wet flies. It is not addressed to the inexperienced, but to those familiar with fly fishing and the language of fly fishermen. Even they must read thoughtfully in order to fully harvest the sometimes subtle offerings.

The author is a Montana fisherman. Gary LaFontaine lives in Deer Lodge and tells of experiences on a couple of Montana mountain lakes, on the upper Clark Fork of the Columbia (his neighborhood stream), Rock Creek (Granite County), Little Blackfoot River, Boulder River (Jefferson County), Jefferson River, Big Hole River, Bear Trap Canyon of Madison River, O'Dell Creek

(Madison County), Missouri River below Hauser Dam, Bluewater Creek and on a scattering of streams in neighboring states and further east.

This comprehensive book is divided into three parts—each a blend of narrative and explanation. In "Part I: The Water," LaFontaine tells how the various niches in flowing waters and mountain lakes are used by trout as weather conditions and invertebrate (mostly insect) activity vary, and how fly fishermen might adjust their tactics. "Part II: The Technique," contains chapters on the theory and art of using the dry fly, wet fly, nymph and minnow-fly. The chapters in "Part III: The Natural Feed," are entitled, "Thoughts on the Caddis," "The Life-Cycle of the Mayfly," "The Salmon Fly—Willow Fly Excitement," "The Grasshopper Frenzy" and "The Effective Imitation of the Sculpin." The 80-page appendix contains construction details of favorite fly patterns with notes on their origins and use.

Fly fishermen should be delighted with the book and it could lead to addiction among those not already persuaded. Fisheries managers will especially approve the postscript in which the author chronicles the horror story of stream destruction in Montana and pleads for environmental action. On the other hand, they will be somewhat concerned by repeated references to trout that were fought to exhaustion before release. Research on survival of released trout has given contradictory results. Perhaps the mortality of played fish is related to degree of fatigue, coupled with water temperatures, velocities and other environmental stresses. This question deserves further attention.

"Challenge of the Trout" is a beautifully written and illustrated fly fishing book by a knowledgeable author.—*George D. Holton*

FATU-HIVA, by Thor Heyerdahl, Doubleday & Co., Inc.; Garden City, New York; 1974, 276 pages, $10

"Man has conceived a bedeviled word. We first let it out of our own mouths and next permitted it to grab us by the nose and lead us astray. The word is 'progress.' When first conceived, this term was meant to describe a forward motion, a change from something bad or good to something better. Then we took one step further.

"With superb self-confidence, we assumed that we ourselves would never change anything for the worse, so we were quick to adopt the same word to describe man's move away from nature."

These words from Thor Heyerdahl's newest book, "Fatu-Hiva," are only a small example of the reverence this writer has for the environment.

In 1936, Heyerdahl and his new bride, Livi, were left by a schooner on the island of Fatu-Hiva in the primitive Marquesas Islands of the South Pacific. With two suitcases of city clothes, a tent, some bottles and test tubes for zoological work and a machete, the Heyerdahls hoped to "escape civilization and live strictly according to nature." The experiment would last for one year.

The newlyweds built a bamboo cabin, lived with a Polynesian cannibal and ate coconut, breadfruit and wild boar. They discovered new friends in the islanders, as well as dangerous enemies. They struggled to fend off insects, rain and diseases such as elephantiasis. Yet, it was a "honeymoon" that marked a turning point in their lives. Dr. Heyerdahl would continue his research of Polynesian culture with expeditions that need no introduction: Kon-Tiki, Aku-Aku and the Ra.

This book is the story of his first expedition and the insights he gained into nature and the Polynesian culture—insights that so inspired him, he was from then on to devote his life to nature. Each page takes you further and further from where you are and closer to Fatu-Hiva.—*Craig Sharpe*

VANISHING WILDLIFE OF NORTH AMERICA, by Thomas B. Allen, National Geographic Society, Washington, D.C.; 1974, 207 pages, $4.25

Many homes have a shelf or two sagging under the weight of accumulated *National Geographic* magazines. Too nice to throw away, they gather dust for the next generation. Well written, easily understood, always beautifully illustrated, this American classic is one of the few periodicals to make its way through the whole family.

"Vanishing Wildlife of North America" is one of the National Geographic Society's many moderately priced special publications. It employs the magazine's proved format and matches its quality. With 192 photos, 17 paintings and a provocative text, this book summarizes the subject of our continent's rare, endangered, threatened and recently lost wildlife.

It is an interesting and complex tale involving ignorance, indifference, greed, politics, bureaucracies and man's and wildlife's seeming inability to get along. The story is unequally balanced by the concern, dedication and selfless effort of a minority to stem, against mounting odds, the destructive trend.

We no longer live with animals, we manipulate them. The resources of wildlife management—money, personnel, land, research—are assigned by a value system that reflects the public's interest. As this book points out, ". . .the proper study of wildlife is man. What we fear, what we hate, and what we admire in animals determine their fate."

Montana is specifically mentioned nine times in connection with beaver, buffalo, trumpeter swans, sandhill cranes, bald eagles and predators in general. Some of the photos were taken in Montana by local photographers. Many more of the illustrations cover Montana animals. All four of Montana's endangered species—the peregrine falcon, Rocky Mountain wolf, black-footed ferret and whooping crane—are discussed in detail. If you like *National Geographic* magazine and/or have an interest in wildlife, you can't help but enjoy this book.—*Mike Aderhold*

WATERFOWL STUDIES, by Bruce Burk, Winchester Press, 1976, 254 pages, $15

This book should provide a valuable addition to the bookshelf of anyone interested in North America's wild ducks, geese and swans.

The bird watcher and naturalist will revel in the more than 700 illustrations which often capture the character of each species and the temperament of the individual bird.

The hunter, often subject to weak early morning and late afternoon light, will benefit from learning to identify birds from the black and white photographs. The photographs help the hunter ascertain body shape and plumage patterns for those poorly lit hunting hours when colors are not readily distinguishable. In addition, 44 photographs in the book are in color.

Although the text is brief, it should augment the knowledge of nearly every reader.

But those who will benefit most from "Waterfowl Studies" are the artists, decoy makers, wood carvers and photographers for whom this book is intended. Bruce Burk is a carver, photographer, artist and naturalist. His camera has captured the shapes,

positions and limb placements of these birds in practically every phase of their lives. Waterfowl flying, preening, sleeping and alert and ready for flight are all pictured in this nature lover's treasure chest.

Thirty-one North American birds and one Asian goose are superbly covered. The author includes the Asian red-breasted goose, which rarely winters on the West Coast, because he feels this is the world's most beautiful goose.

From the tiny bufflehead to the trumpeter swan, largest of all flying birds, "Waterfowl Studies" should delight anyone fascinated by these creatures equally at home on water and in the air. —*Martin Frenzel*

THE POVERTY OF POWER (Energy and the Economic Crisis), by Barry Commoner, Alfred A. Knopf, New York, 1976, 314 pages, $10

Don't speed read this book; reread it. The 264 pages of text and 40 pages of notes elucidate the triple "E's" of our time: Energy, Economics and Environment. Curious quoted comments by big media names like Dixy Lee Ray, Gerald Ford and William Simon pepper the pages as the distinguished author of "The Closing Circle" tells you how your leaders are handling the intricate developments of the constantly crisscrossing three E's.

Commoner begins with a racy couple of chapters on the First and Second Laws of Thermodynamics. He helps you understand why the well-known First Law about conservation of energy has been foisted upon you as a measuring device by the controllers of energy production, when in reality its very terms are inadequate for measurement. Then he tells you how the First Law pales in the face of the lesser known, reality controlling Second Law about efficiency of energy utilization and he brings you to terms with the social message of his book: Waste not, want not.

The meaty middle chapters cover the aspects of power: how you get your watts and how you should get them. Generally, you get them from oil, coal and nuclear power. Commoner thinks you should look more to the sun. He describes why the sun as an energy source casts an umbra on the primary free enterprise energy sources currently in profit vogue. You are deftly and simply convinced that energy from the sun is free while energy from other sources is merely cash enterprise. When the price of gas goes up this winter, he tells you why you won't get a fair shake from the oil company without the old profit squeeze on your extended hand. And while a wasteland from strip mining looms in eastern Montana, he tells you why there is an impossible economic discontinuity between a lump of coal and the presently planned power function it is intended to inefficiently complete.

You learn why most sane scientists prefer their children not play on the grounds outside your local commercial nuclear power generating plant. And you learn just why the private insurance moguls run from any nuclear power policy, leaving it in the hands of the federal government, i.e., your taxpaying wallet. Then you are clobbered with the realization that every unrenewable barrel of oil, every lump of coal or pound of U-235 carries with it a built-in inflated dollar sign while the rays of the sun just keep on coming in—renewable, uninflated and free.

In the last three chapters, the uses, prices and poverty of power on your planet are aptly described. You won't pooh-pooh Commoner's approach as a thinly veiled appeal to socialism. He comes across with a more open mind than that. His critical arrow is aimed at the free enterprise system: You are paying a pretty penny for power and it's a raw deal. He hits the bull's eye of our economic-environmental crises and scores a point for re-evaluation of the system. You see that the economic sphere is the point where the energy crisis is linked to the environmental crisis. Your inefficient usage of energy harms the environment while you watch it happen from the unemployment line.

The upshot of Commoner's book is that you should pay more attention to and less money for the amount of power you buy. And the refreshing aspect of reading his book is that the problems which are occurring at present in your economy, your environment and in your dubious sources of energy used to sustain that economy and preserve that environment will be ultimately solved because the way to their solution is no longer hazy: Look to the sun.—*Aaron R. Spurway*

Next Time

Watch for these features in the Sept./Oct. 1977 issue of *Montana Outdoors:*

Landowner/Recreationist Relations. Several articles covering different views of this all-important and complex situation.

What Happened to Silver Creek? An excellent small stream trout fishery suddenly ceased to exist. Check the next issue to find out why.

Wildlife and Dollar Signs. The value of a wild animal really defies monetary tabulation. However, today's environmental assessment and planning process sometimes make it necessary.

Department Land. The department's land acquisition program is a point of continuous controversy. The next issue contains a detailed explanation of the program and its value to wildlife and recreation.

There's a Red Flag on Deer Mountain. How a small red flag, which initially seems insignificant, foretells future ruin for deer, other wildlife and, in the end, quality outdoor recreation.

This three-picture sequence of Big Spring Creek was taken before, during and after the 1975 flood, immediately upstream from the channel alteration made in 1961. F&G photos: Mike Poore

Big Spring Creek Revisited

by Mike Poore

The July/August 1971 *Montana Outdoors* carried an article, "A Bad Spring on a Big Creek," by Dick Baldes, which described the extensive bank erosion that occurred over a 10-year period after a landowner straightened 4,200 feet of meandering Big Spring Creek in 1961. Destruction of property and habitat upstream and downstream resulting from this alteration has been more severe than anyone anticipated. The Montana Dept. of Fish and Game has closely monitored the problem and now has possibly the best documentation ever assembled on effects of stream straightening. Straightening a stream channel increases the gradient and water velocity. As a result of the increased water

velocity, accelerated erosion will occur immediately upstream as the stream attempts to reestablish its meanders by deepening the channel. This article updates what has happened to Big Spring Creek since 1971.

* * * * *

Like most Montana streams, Big Spring Creek has a history of spring flooding, with minor floods nearly every year and major floods about every 10 years. Over the years, floods have extensively damaged the city of Lewistown and other areas in the watershed. In many cases, flood damage has been compounded by channel straightening and destruction of stream bank vegetation. Building on the "normal" flood plain has also added to the damage caused by annual flooding. Damage has been minimal where the stream channel and vegetative cover are undisturbed and buildings are not encroaching onto the flood plain.

In 1969, a watershed project was started with the objectives of alleviating flood damage to private property, reducing erosion and sediment deposition and providing additional water-based recreational facilities. Fergus County, Lewistown and the Fergus County Soil and Water Conservation District jointly sponsored the project to construct flood control dams on the five major tributaries of Big Spring Creek and to improve the mill diversion channel which diverts a portion of the flood waters around Lewistown. Three dams and the mill ditch have been completed and one other dam is under construction.

The earlier article described how a once stable stream channel increased in width through erosion from 28 feet in 1961 to 160 feet by 1971, immediately upstream from a major channel change. Erosion was negligible during 1972 and 1973 because of below normal spring flows. However, major flooding occurred again in 1974 when heavy spring rains fell on a deep snow pack. Bank full flows for a six-week period caused 30-40 feet of bank erosion. (Two of the flood control dams were functioning during the 1974 flood.) Flow patterns were altered by the dams from the traditional short flash flood to an extended bank full flow while the dams slowly drained. Leveling off the flood peaks reduced damage within Lewistown, but the extended high flow destroyed stream banks throughout the watershed.

Further damage occurred again in 1975 when heavy rains caused another major flood. Peak flows were nearly 2,400 cubic feet per second (cfs), compared to a normal flow of about 150 cfs. Extensive stream bank erosion occurred, particularly upstream from the 1961 channel alteration. When flood waters finally subsided, *more erosion had occurred in a month than in the previous 50 years combined.* The channel had increased in width from 160 feet to 476 feet. In one day, nearly 100 horizontal feet of topsoil disappeared on one section of the river. Much of the erosion was the result of the creek cutting vertically through highly erosive materials; this happened even at moderate flows. An engineer for the Soil Conservation Service (SCS) estimated 20,000 cubic yards of topsoil and gravel were washed away from this one spot.

In addition, vertical cutting in the stream channel washed under the footings of the main highway bridge causing structural failures which necessitated emergency repairs. The north approach to the bridge caved in and riprap had to be placed along the highway to keep the road from washing out. A new highway bridge was constructed in 1976 at a cost of $199,000.

Vertical cutting in the channel progressed upstream over 2,000 feet and threatened to undermine a large irrigation diversion structure, another bridge and possibly the center of Lewistown. The city requested Emergency Watershed Protection Funds (so-called "Section 216 funds," made available through an ongoing federal program for flood damage restoration) to correct the problem. Engineers from the SCS are designing grade stabilization structures, riprap, dikes and channel work amounting to $450,000 in an attempt to stabilize the stream.

Along with the major erosion problems that resulted upstream from channel alteration, massive deposition of topsoil and gravels occurred for several miles downstream. Much of the stream channel was completely plugged with thousands of yards of material washed from upstream. The channel lost its capacity to carry water and was bank full even at normal low flow. As a result, several new channels were started when flood waters cut across hay fields, again adding more tons of deposition to the downstream system. Stream stabilization work amounting to about $300,000 in federal 216 flood relief funds is planned for this area downstream from the channel change. A grade stabilization structure, channel dredging, dikes, riprap and reestablishing stream bank vegetation are necessary to begin protecting this area from future accelerated erosion.

Flooding, sedimentation and destruction of habitat were also detrimental to trout. Preliminary population estimates made in 1976 immediately downstream from the channel alteration show trout numbers decreased nearly 50% from 1974 estimates. In addition to the adverse effect on the aquatic ecosystem, considerable wildlife habitat was also destroyed.

If all five of the proposed flood control dams had been operating at the time of the flood, peak flows would have been reduced somewhat, but erosion would still have been severe because of the extended bank full condition. Therefore, man not only straightened the stream, thus altering the gradient and meander patterns which took Mother Nature thousands of years to stabilize, but he also created an unnatural and detrimental flood flow pattern by damming the tributaries. In spite

of the extensive stream stabilization projects for Big Spring Creek, the stream will probably never be as stable at it was prior to the 1961 channel alteration. Consequently, it will never again have the quality fishery and recreation it once offered.

The projects proposed to stabilize the stream channel and repair damage resulting from the channelization will *cost taxpayers more than a million dollars* after escalating construction costs are included. Add to this the loss of productive agricultural land, destruction of fish and wildlife habitat and inconvenience and cost to individual landowners along the stream, and it becomes clear why Montana was long overdue for legislation regulating activities of private individuals in natural streams. Most of this damage resulted from one poorly planned channel change by one landowner.

The Natural Streambed and Land Preservation Act (SB 310), passed by the 1975 Montana Legislature, now provides a tool for regulating stream alterations and hopefully will prevent what happened to Big Spring Creek from ever happening again. The legislature and many individuals who worked so long and hard toward its passage should be commended. Responsibility for implementing the new law is delegated to the local conservation districts and they, too, should be commended for their work since its implementation. Statewide, they have handled over 2,000 applications since the law went into effect Jan. 1, 1976.

In Montana—renowned for its high quality rivers and streams—we have a special responsibility to ourselves, our children and the rest of the nation to protect this irreplaceable part of our national heritage. It is alarming to see the quality of many of the state's streams declining because of channelization, water withdrawals, flood plain development, pollution and overgrazing. For some streams, it is already too late. At the present rate of exploitation, many other streams will exist in their natural condition only in the memories of those lucky enough to have seen them prior to man's "improvements." The implementation of SB 310 is only the first step on the long road back to protecting streams. Education and development of a stronger stream management ethic are necessary if we are to protect or, hopefully, improve streams for future generations. ■

Contributors

Rough, brawling, raucous, wild, a sinuous giant. These words describe the Missouri viewed by Meriwether Lewis and William Clark in the early 1800s. Today, some 11 million persons live in the six states through which the Missouri flows. Along most of the Missouri, Lewis and Clark would be hard pressed to find the sand bars, islands and braided channels they came to know. But one stretch of the river remains nearly as they saw it—the Missouri River Breaks of north central Montana. Because of the untiring efforts of Sen. Lee Metcalf and many others, the wild future of the 150-mile stretch is assured. For an historical perspective of how this came to be, turn to **Ken Walcheck's** article, "For the Missouri Breaks: A Wild Future," on page 15. The department's information officer in Miles City, Walcheck is no stranger to the magic the Missouri weaves. Assisted by other department employes, he annually conducts a float trip down the Missouri as a three-credit course for Northern Montana College students, presenting lectures on the river's wildlife, biology, history and archaeology. Walcheck holds a B.S. in wildlife conservation and biology from Wisconsin State University in Stevens Point and an M.S. in applied science (ecology) from Montana State University, Bozeman.

In 1961, a landowner near Lewistown straightened 4,200 feet of meandering Big Spring Creek. Destruction of property and fish and wildlife habitat upstream and downstream has been more severe than anyone anticipated. But the problems with Big Spring Creek didn't end there. Major flooding occurred in 1974 and 1975, in spite of the fact that two of five flood control dams had been constructed. When the flood waters of 1975 subsided, more erosion had occurred in a month than in the previous 50 years put together. Turn to **Mike Poore's** article, "Big Spring Creek Revisited," on page 31. A department fisheries management biologist in Lewistown, Poore received his B.S. in wildlife technology from the University of Montana, Missoula, and his M.S. in fish and wildlife management from MSU.

Pat Marcuson has spent the last 10 years working on lakes in the rugged Absaroka, Beartooth and Crazy mountains. His research has resulted in a complete inventory of 1,000 alpine lakes, many of them nameless jewels in the high country. He knows each lake's area, shore line length, width, depth, how much water flows in and out of it, what fish inhabit it, what they eat and where they spawn. He has examined lakes in which fish plants have been unsuccessful. Coupled with the information about the lake's characteristics, researchers now have a better understanding of the limitations of certain fish species. Marcuson received his B.S. in zoology and his M.S. in fisheries management, both from the University of Idaho, Moscow. He is a fisheries and wildlife biologist with the department, headquartered in Red Lodge. Turn to "Aquatic Research in the Clouds" on page 34.

Department Projects:

Aquatic Research in the Clouds

story and photos by Pat Marcuson

The high mountain lake country of south central Montana's Beartooth Mountains, a unique, but fragile, environment.

Mountain lakes can be great fishing—winter and summer—and scientific research can help keep it that way.

MONTANA POSSESSES a variety of landscapes. One of the most outstanding is the rugged landscape of the Beartooth, Absaroka and Crazy Mountains in south central Montana. More than 1,000 lakes adorn glaciated valleys and occupy hollows of sculptured rock and mirror-like depressions in the forest. Numerous streams plunge from these mountains—Montana's highest and also the targets of an intense alpine investigation of aquatic resources.

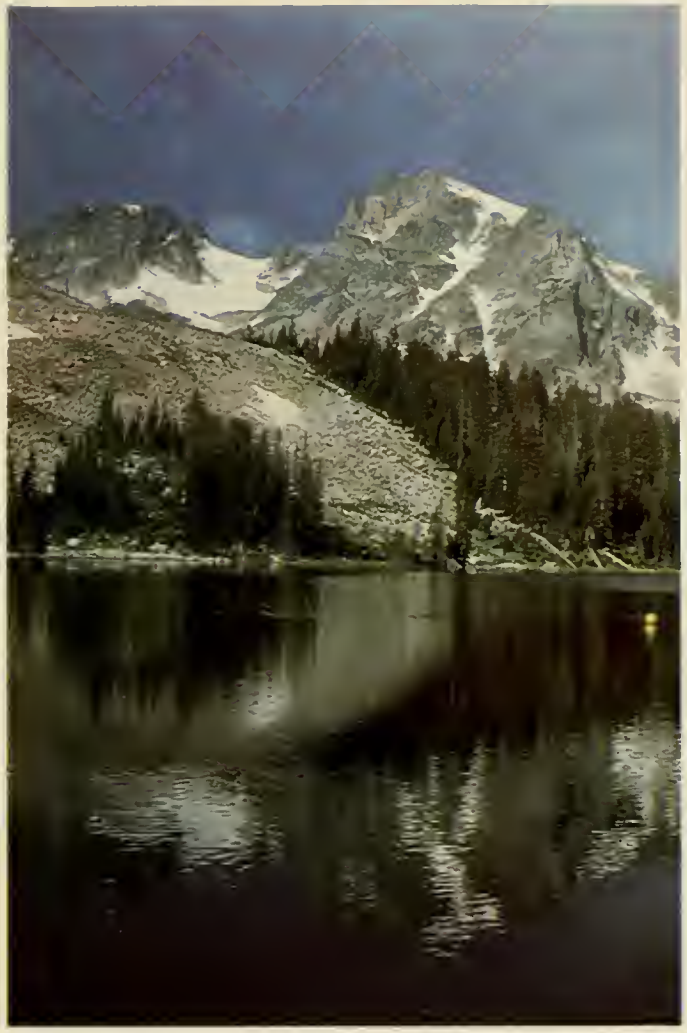
Ten years ago, I started surveying lakes in the Beartooth and Absaroka mountains. At the outset, the department's regional supervisor in Billings, Fletcher E. Newby (now deputy director of the department), recognized the lack of knowledge and need for a framework from which to manage these popular waters. The job was mine.

First efforts utilized a nifty helicopter equipped with pontoons for lake landings. Flown by the department's chief pilot, Cliff Higgins, this helicopter is used statewide for mountain lake surveys. The first summer in the Beartooths, 15 lakes on Lake Plateau were surveyed. In succeeding years, more lakes in this range and in the Crazies were inventoried with the chopper's aid. But this luxury ended when the small number of lakes outside the Beartooth Primitive Area were completed—Forest Service (FS) regulations restrict motorized use in primitive and wilderness areas.

The task touched ground, work began and over the last 10 years, it became one of the largest surveys of its type in the world. Every one of one thousand lakes in the three ranges was visited. Because of the fish sampling technique using overnight gill nets, part of two days was required to finish work at each lake.

Initial work was slow and somewhat clumsy, so only about 50 lakes were studied each summer. However, as the study progressed, efficiency improved and gear selection and methods were refined. Lakes started adding up. At this point, some special studies on golden trout, Arctic grayling, trout food habits, spawning habits, experiments with stocking fish and evaluation of backcountry users were initiated.

To accomplish the job, I needed additional manpower. I approached personnel from the Gallatin and



The hundreds of scenic alpine lakes provide both a challenging research opportunity and a mecca for nonmechanized outdoor recreation.

Pat Marcuson measuring the dissolved oxygen content—a vital factor in fish survival—of water from an ice-covered mountain lake.

Custer National forests and we entered into cooperative agreements. The FS provided $7,500 which partially funded five summer assistants. By this time, I was covering 200-285 lakes per summer, besides working on special studies both in the mountains and on valley floors.

A coding system was needed to identify and separate the vast amount of information collected on 952 lakes in the Beartooth and Absaroka mountain ranges and 48 lakes in the Crazies.

Maps of each lake (many of the alpine lakes are nameless) were made from aerial photographs and included area, shore line length and mean widths and depths. Beyond this information, I examined availability of fish food, trout spawning sites and the amount of water flowing in and out of each lake. I sampled substrates (materials such as rock, gravel, sand and silt on stream and lake bottoms) used by trout for breeding and examined the composition and abundance of fish populations.

The studies also included sampling under ice during winter. This provided some of the more revealing answers about success or failure of trout species in an alpine environment. Trapping operations were conducted on selected waters to determine movement, spawning habits and life histories of various fish species. Contents of over 3,000 fish stomachs were analyzed and I discovered fish diets were often profoundly different between summer and winter. I also collected water samples during each season.

Eggs from mature female trout were counted and subsequent hatching success was studied. Eggs were used as stock for replants, for testing hatching success in various substrates and for timing the hatch in cold water. I tried to gain accuracy in predicting whether a species might become self-sustaining if it were stocked in a lake without fish. I am also anxious to know if trout eggs buried in selected areas will establish future spawning runs. Some of the first experiments should produce results this spring—late June to August for lakes at 7,000-11,000 feet elevation.

The 952 lakes studied in the Beartooth and Absaroka mountains occupy 9,390 surface acres in an area of 1,404 square miles. The Clarks Fork River

drainage near Cooke City has 409 lakes submerging approximately 6% of the total drainage. Of the 952 lakes, 27% (or 257 lakes) have fish and another 17% (or 162 lakes) could support fish.

Brook and cutthroat trout each exist in 34% of the lakes with fish, rainbow trout in 6%, Arctic grayling in 2%, golden and brown trout each in 1% and 22% of the lakes have several species coexisting.

Brook trout were first introduced into these alpine lakes between 1914 and the early '20s. They were brought from the eastern United States to the National Fish Hatchery in Bozeman. They were then transported via train to holding areas in towns along the train's route. Early rod and gun club members, trail builders, prospectors, sheepherders and game wardens distributed the fish to the lakes.

First introduced into the Beartooth and Absaroka mountain lakes in the 1930s, rainbow trout were mostly planted by department personnel. Two non-department persons, Herm Hendrickson and Dick Logan of Billings, made several experimental air drops of fish into a small lake near the Billings airport in 1938. Later, Hendrickson, John Schoffield, a department employe, and Paul Tarrant, a pilot with a Stearman biplane, dropped brook and rainbow trout into mountain lakes in the Cooke City area. This 1939 action pioneered aerial fish stocking in mountain lakes in Montana.

Golden trout were introduced into three Beartooth lakes in 1938. These fish were acquired from California, but the California Legislature has since prohibited trade or sale of its state fish. In the mid-1950s, spawn was taken from the 1938 stock, some additional fish were purchased from Wyoming and 10 other lakes received goldens. Today, only two pure-strain golden populations remain in isolated fisheries in the Beartooths. Several other lakes contain goldens, but in forms hybridized with other spring spawning fish so genetic integrity is lost.

Arctic grayling were introduced in the 1950s and now occur in 10 lakes. Four lakes are self-sustaining and fish movement downstream accounts for grayling in six other lakes.

In recent years, cutthroat trout have been utilized as the "mountain lake fish." Cutthroat perform well, are popular sport fish and native to Montana. They are stocked for angling enjoyment, but if no reproduction occurs, the remaining fish die out in seven years. Lakes of this sort require scheduled plants for consistent fishing. Research on Beartooth lakes suggests that a fallow period (two years with no fish planted) may provide higher quality fishing. The "off and on" fishery surely would not be appealing to the unaware angler who hiked a long distance in anticipation of repeating a satisfying experience. But for those lucky enough to hit the lake during prime fishing, good memories would be well established. Cutthroat inhabit 88 lakes in the Beartooth and Absaroka ranges, of which 32 are self-sustaining and 56 are stocked at intervals. Before ice break-up this year, fish in approximately 15 of these lakes will die of old age.

Numerous factors lead to success or failure of planted trout. All species have certain requirements in order to perpetuate their populations. Most trout require clean gravel with quality water permeating through. Lakes may have either too much or too little spawning area. With too much, a fish population may become too large for existing food. Fish are stunted, so angling interest fades. When populations become too dense, natural mortality—such as disease, food shortages, oxygen deficiencies or parasites—intensifies. Population fluctuations are cyclic, but food availability is nearly impossible to predict. The other extreme—too little spawning area—is usually better. Lakes with this characteristic often provide trophy fish. But if lakes such as these with low fish densities are heavily used by fishermen, additional stocking may be necessary to maintain satisfactory angling.

Winter is critical for trout. If organisms crucial to the trout's food needs are absent, fish suffer and may die. The same thing happens when dissolved oxygen levels lower. Size of lakes, shape and quantity of water exchange all play roles in the success or failure of fisheries.

Evaluation of unsuccessful trout introductions, coupled with study of lake characteristics, has helped researchers understand the limitations of certain fishes. Sometimes we can substitute a different species for planting and the population will become self-sustaining. Thus, we can learn more about lakes and the requirements of each species.

By planting trout in several types of mountain lakes and altering the number of fish introduced, I observed various responses in growth of fish. I also observed the effect of altering numbers of fish planted on food organisms. By quantifying and identifying food critters before a fish plant and for some time after the fish are gone, the impact of fish densities on food organisms can be assessed.

Findings suggest that virgin lakes stocked with cutthroat trout regain their original virgin status two years after the fish die out. Recovery time depends on the number of fish introduced.

In the Beartooth and Absaroka mountains, 57% of the lakes have no fish or fisheries potential. I feel that many lakes with fisheries potential should remain barren of fish. If at some future time a premium trout is found which excels in mountain waters, I hope we still have some barren lakes into which to introduce it. And too, invertebrates, plankton and other organisms characteristic of barren lakes have scientific value that would dictate leaving some lakes without fish.

This mountain lake study was designed to provide a complete inventory, as well as to maximize recreational benefits and maintain quality fishing. The data gathered will provide some guidelines for managing this large alpine resource without interruption of wilderness integrity. ■

graphics Donita Sexton

Montana's Dome Builder

by Rick Schroeder

Most people think of domes as modern, 20th century inventions, so complex and intricate in design that a master architect and carpenter would be needed to build them. It may surprise you to learn that domes have been built in Montana for hundreds of years. The builder? None other than Montana's state bird, the western meadowlark.

Colorful, abundant and highly vocal, the western meadowlark is an excellent choice as Montana's state bird. It is found throughout most of the state in the prairies and grassy valleys. A common yet striking bird, the western meadowlark is also honored as state bird in Kansas, Wyoming, Nebraska, North Dakota and Oregon.

Before the spring snow has left the ground, male meadowlarks begin to vie for nesting territory. A promising patch of grass or field is sought for a breeding area. The brightly colored male marks his chosen territory by singing loudly from its boundaries. Perched on a fence post or treetop, he unleashes a bubbling tune of rich, deep notes. Any invading males are promptly chased and driven from the breeding ground.

After finding a mate, the male redoubles his defense efforts, while the female selects a nest site. The nest is constructed on the ground, usually in a slight, cup-shaped depression. The meadowlark nest is a unique structure. In areas of short grass or clover, the female intricately weaves a dome over the cup-shaped nest. With the skill of a practiced carpenter, she carefully places each blade of grass until the nest is completely concealed.

The main purpose of the elaborate and unusual nest is to protect the eggs and young from predators. Other ground nesting birds, such as terns, lay their eggs completely unprotected and in the open. These species depend on the matching color of eggs and environment to safeguard them from predation. Meadowlark eggs are white with small red speckles. They would be easily seen and consumed by predators were it not for the protective dome.

After hatching, the young enjoy the security of the dome for about 10 days. The growing birds are soon crowded out and seek shelter amid the prairie grasses. Both parents continue feeding the hungry young for about two weeks. Grubs, grasshoppers and other insects form the bulk of their summer diet. In winter, they subsist on weed seeds and waste grain. A few hardy birds may winter in Montana, but most move further south.

Identification of the western meadowlark is fairly simple. Note the bright yellow breast and distinctive black "V" across the throat. As it bursts into flight, its white outer tail feathers show prominently. Rapid flight, followed by short sails, is another characteristic.

The unique dome, bubbling song and simple beauty of the western meadowlark make it a fitting representative of Montana's bird life. Perhaps the most memorable attribute of this bird is the superlative song of the male. His bold tune echoes over the plains. A hundred variations, each beyond description, flow from his vibrating throat. If any bird can be said to sing its heart out, the western meadowlark is a worthy nomination. His is a song that, once recognized, is not easily forgotten. ■

The Missouri Has a Wild Future
see page 15